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Modern society in the age of educational challenges

edited by

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Nowy Sącz 2023

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Technical Editing
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ISBN 978-83-67661-21-8

Themed Proceedings for the year 2022

Publisher
Akademia Nauk Stosowanych w Nowym Sączu
ul. Staszica 1, 33-300 Nowy Sącz, tel.: +48 18 443 45 45, e-mail: sog@ans-ns.edu.pl
www.ans-ns.edu.pl

Publisher's adress
Wydawnictwo Naukowe Akademii Nauk Stosowanych w Nowym Sączu
ul. Staszica 1, 33-300 Nowy Sącz, tel.: +48 18 443 45 45, e-mail: tbolanowska@ans-ns.edu.pl
wydawnictwo.ans-ns.edu.pl

Printed by
Wydawnictwo i drukarnia NOVA SANDEC s.c.
Mariusz Kałyniuk, Roman Kałyniuk
ul. Lwowska 143, 33-300 Nowy Sącz, tel. +48 18 441 02 88, e-mail: biuro@novasandec.pl

Contents

Introduction

Modern education, school, and pupil present before the teacher a number of challenges resulting from social expectations. Focusing on students needs and understanding the dynamics of changes occurring in society clearly demonstrate the mental differences between generations and the need for rapid adaptation to new conditions; this phenomenon, in turn, is associated with the flexibility of minds and taking actions aimed at developing competences that will enable young people to function successfully on the labour market in the future.

An important source of the contemporary economic competitiveness and, at the same time, a key economic resource is knowledge and the ability to use it for taking innovative actions. Therefore, human capital, intellectual resources, and striving for unconventional and innovative actions are an important area of pedagogical work in a modern school. An innovative economy will not be developed without creative thinking, creative problem solving, the ability to communicate in various multicultural groups and, most importantly, without knowledge concerning many fields of science. Striving for developing self-education skills and preparing students for lifelong learning is the primary task at all levels of education, from kindergarten to university education. However, the desired knowledge must also be enriched over time through gaining professional experience and cooperation with the social environment.

Preparing children and young people for the requirements of the future is not an easy task, because it is impossible to predict with certainty what specific qualifications and competences will be necessary in the near or distant future. We must assume, and this can already be observed, that employers' requirements will grow constantly and will certainly become higher. Currently, in society there is a visible trend of valuing skills such as: communication skills (not creating but overcoming barriers in verbal and non-verbal communication), cooperation within a team and ability to take on various roles within it, and the use of modern information technologies. Additionally, personality traits such as commitment, credibility, reliability and honesty, ability to cope with stressful situations, and resistance to stress are important. It is also worth emphasizing that the need for memorization is decreasing, and the need for developing and improving analytical and critical thinking as well as the ability to make a legitimate generalization and infer on the basis of various sources of information is increasing. However, the selection of reliable sources and the ability to segment and classify said sources must be realized consistently with goals and needs, in a planned and organized manner. A well-functioning society is based on security and social order, within which individuals can satisfy their needs at an acceptable level, enter into desirable relationships with others, participate in an appropriate range of social life situations and achieve goals in the adopted lifestyle.

A teacher of a modern school faces exceptionally important tasks, and fulfilling the teaching role in the knowledge-based society is a multi-faceted obligation. Undoubtedly, in addition to extensive substantive and methodological knowledge, the teacher must be a professional in influencing the specific sphere of students' personality regarding education and preparation for life in society through developing self-confidence,

independence in actions, organization of work, and responsibility for one's own success and a sense of agency. The teacher is to be a mentor, supporting the development of students consistent with their capabilities. Teacher's deep reflection on motivating students to work, the care for creating an environment conducive to learning through experimentation and children's discovering the world by children will improve children's divergent thinking as well as the ability to ask questions and look for answers. Building a modern civil society in the local, regional, national and global dimensions is the responsibility of the education system.

The authors of the papers included in this publication are academic teachers from three cooperating European universities, i.e.: University of Belgrade in Belgrade (Teacher Education Faculty), University of Split (Faculty of Humanities and Social Sciences) and the University of Applied Sciences in Nowy Sącz (Faculty of Social Sciences and Arts). Their similar theoretical and research interests and the desire to exchange experiences in the field of education in the context of modern society inspired the publication of this book. The content of individual chapters of this publication constitutes a broad field of scientific considerations on education. Theoretical references, analysis of empirical research results and demonstrating the possibilities of their implementation into pedagogical practice are important in the discussion regarding the entities of education, primarily the teacher and pupil of a modern school. The multi-threaded and complex contexts of selected issues, presented from the perspective of education in the three countries, are cognitively valuable and show the diversity of topics that scientists deal with. This is a good platform for sharing one's own experience and indicating the directions of discourses concerning school and education at various levels of education in different countries.

This publication is divided into two parts. The first part contains papers concerning the teacher and their professional work. The studies included in the second part cover pupil-oriented issues and are presented from the perspective of various issues related to primary school education.

PART 1.

When discussing teachers' preparation for their profession, we cannot disregard their competences. These competences are necessary for professional interactions and fulfilling professional roles. Among many important competences, those competences relating to social and emotional aspects of cooperation are basic and necessary to properly implement the teaching and educational process. Maja Ljubetić, Toni Maglica and Željana Vukadin present the results of their research on the self-assessment of early school and preschool education teachers in regards to social and emotional competences. The authors searched for relationships between these competences and teachers' work experience, their level of education and age. The researchers were also interested in the phenomenon of individual components of social and emotional competences and the correlations between them. The results of these empirical studies are interesting and provide the basis for formulating generalizations and conclusions useful in the education and professional development of teachers.

The issue of teaching practice and its indispensable, important place in the teacher education system shows that preparation for the teaching profession should also be conducted in direct contact with educational institutions. Educating teachers during

studies encompasses theoretical knowledge, practical classes improving professional skills and acquiring social competences. All these components are necessary for implementing the full scope of pedagogical practice in kindergartens and primary schools in the psychological, pedagogical, substantive and methodological aspects. Working with younger children requires specific and special predispositions from the teacher. The authors Nataša Janković and Zorica Savić Nenadović write about an optional course aimed at preparing teachers to teach English in kindergartens and lower grades of primary school. The presented material concerns the period of the COVID-19 pandemic, therefore the authors focus on students' internships during the epidemic and also draw attention to certain related obstacles and demonstrate ways to overcome them.

Renáta Bernátová addresses the issue regarding basic natural knowledge concerning fungi possessed by students of the first year of bachelor's studies in preschool and early school pedagogy. The results of empirical research demonstrate that the level of scientific knowledge regarding fungi, assessed by future teachers on the basis of the author's teacher's test, is unsatisfactory. The author presents an interesting concept and idea of including content regarding fungi in educational programs effective in Slovak kindergartens, primary schools and junior high schools. The proposed thematic scope presents specific content in the fields of nature and biology that should be included in the current curricula so that future society's knowledge on this subject would be broader, more thorough and useful in everyday life.

PART 2.

The issue of education during the coronavirus pandemic is also referred to in the paper by Ljiljana Plazinić and Nevena Buđevac. The authors investigated pupils' motivation and their opinions on engaging in learning during the COVID-19 pandemic. Pupils assessed their own motivation to learn and activity in various courses, which took the form of shortened stationary classes at school and remote teaching classes. In their ultimate conclusion authors emphasize that despite the differences between these two forms of teaching, it should be noted that these forms have one feature in common – the dominance of teaching based on monologue.

Ivko Nikolić and Predrag Milosavljević tackled the issue of teaching based on problem solving. Many educators, searching for a child-friendly educational system, abandoned the concept of traditional teaching in favour of progressivist pedagogy, which began with J. Dewey's school. The authors cite representatives of various theories under which teaching through problem solving was strongly embedded. Among them are the acclaimed authorities J. Piaget, L. Vygotsky, J. Bruner and many others. The independent process of acquiring knowledge by pupils through posing and solving problems prepares pupils for independent learning. The use of convergent and divergent thinking while simultaneously utilizing various sources of knowledge and personal experience allows for observing cause and effect relationships between phenomena. The authors prove that through engaging in problem-based learning, pupils acquire more consolidated knowledge, are more creative and self-confident.

The subject of Jacek Szybowski's paper is related to teaching mathematics at the early school education stage. The author defines and provides the properties of natural numbers, refers to the core curriculum for preschool and early school education effective in Poland, and presents students' achievements in learning natural numbers at these

stages of education. The basis for considerations concerning aspects of natural numbers consists in the recognition and support of the development of operational thinking in children. The author also expands aspects of natural numbers: quantitative, ordinal and measurement, with algebraic and coding aspects, providing specific examples that can be used in teaching children aged 7-10.

Systematically introducing pupils to reading is a major challenge for an early school teacher. One such opportunity for this type of activitites is the use of required readings included in the proposed canon for pupils of grades I-III during classes. The author – Magdalena Palacz – presents traditional and modern methodological solutions that can be utilized when working with required readings in early school education. The part of the paper regarding the results of empirical research contains material displaying the similarities and differences between the required readings preferred by pupils of grades I-III of primary school and the suggestions of the authors of educational packages and the actual implementation of school readings.

Finally, it is worth emphasizing that the pedagogical aspect of many issues related to contemporary education has a special place among social topics. The aspects of these considerations presented in this publication are topical and interesting, although they provide only a fragmentary insight into current educational issues. Both theoretical considerations and analysis of the results of individual authors' own research are only some of important problems, but they can undoubtedly be an inspiration for further in-depth empirical exploration.

This publication is addressed to teachers who want to deepen their knowledge and reflectively engage in self-education, personal and professional development. It can also be used by students of teaching faculties and future teachers who are interested in education in various European countries. Despite different education systems, many problems concern the same or similar issues. Certainly, the role of the teacher and its importance for society, concern for the good quality of education and supporting pupils' development are priority areas worthy of engaging in discussions and designing research concerning the improvement of educational systems.

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PART 1.

SELF-ASSESSMENT OF EARLY CHILDHOOD AND PRESCHOOL EDUCATORS' SOCIAL AND EMOTIONAL COMPETENCES

(*Maja Ljubetić*, *Toni Maglica*, *Željana Vukadin*)[1]

Summary

This research aimed to investigate the level of self-assessed social and emotional competencies (SEC) in early childhood and preschool educators. The Personal Assessment and Reflection – SEL Competencies for School Leaders, Staff, and Adults (CASEL, 2017) questionnaire was used on a sample of 234 educators. The goal was to test whether these competences are related to work experience, level of education, and educators' age and whether different components of social and emotional competences mutually correlate. The results indicate a high level of self-assessed social and emotional competences among participants. It was shown that age had no connection to either SEC group. A significant correlation was proved between work experience and self-assessment of responsible decision making. The level of education correlated only with the results obtained from the self-management subscale. All results from SEC subscales are mutually correlated to one another.

Keywords: early childhood educators, preschool educators, social competence, emotional competence, self-assessment.

Introduction

During the last century, significant social changes and changes in the life experience among children and youth occurred at the global level. These dynamic changes directly impact modern families. However, educational institutions are also facing great challenges. Therefore, we are witnessing changes in family structures, in the quality and quantity of time spent together by parents and children, in limitations in the number of opportunities for spontaneous children's play with peers, and in a decrease in interest in physical activities. Simultaneously, media, gradually but persistently, take over a more important role in people's lives, and the contents and messages being shared are often not safe or educational for children and youth (Brennen, Howard, 2020, according to: Krelja Kurelović, Tomac, Polić, 2021; González-Padilla, Tortolero-Blanco, 2020). Therefore, there is an evident need for children's empowerment by encouraging their physical and especially, social and emotional development (CASEL, 2007, 2017, 2020).

Within the last decade, the concept of social and emotional learning (SEL) with the purpose of gaining and developing social and emotional competences has left a considerable impact in the field of education. SEL is seen as a constituent part of education and human development (CASEL 2020). This is a process during which children/youth (and adults) acquire and apply knowledge, skills, and attitudes that are necessary to: develop healthy identities, manage emotions, achieve personal and collective goals, express

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and show empathy towards others, establish and maintain supportive relationships and make responsible and caring decisions. It improves educational equality and excellence via a partnership among schools, families, and other communities, intending to establish a surrounding suitable for learning and gaining experience. This learning includes trust and cooperation relationships, a defined and meaningful curriculum and teaching process, as well as continuous evaluation. Furthermore, SEL can help remove different forms of injustice, and simultaneously, empower the youth and adults to jointly create successful schools and contribute to safe, healthy, and fair communities (CASEL, 2020). SEL advantages and importance are emphasized by Llorent et al. (2020), who states that the children's literacy competence could be improved by focusing on their social and emotional development.

Therefore, CASEL (2008; according to Zhou, Ee, 2012) emphasizes the need for SEL to acquire and improve five groups of mutually connected SECs: self-awareness, self-management, social awareness, relationship skills, and responsible decision making. These competences are key for achieving healthy, complete, and successful development, and they are predictors of education, future occupation, health, and welfare of each individual (Schoon, 2021).

1. Development and Learning

Emotions shape the overall learning process, they impact how and what is being learnt, and early childhood presents a unique period for acquiring and developing social and emotional skills. Children who are capable of managing their emotions are more likely to adjust to school more easily, and to achieve better academic results (Maglica, Ribičić, Ljubetić, 2020) as these are precisely the competences that provide a firm base for current and future academic success (McLaughlin, Aspden, Clarke, 2017; Alzahrani, Alharbi, Alodwani, 2019). Children's SEC is also a capability to establish safe relationships with adults and peers, to experience, manage and express emotions, to research the environment, and to learn. Also, it is an important component indicating how ready the early childhood and preschool education institutions are to enable healthy and complete children's development (Alzahrani et al., 2019). The evidence indicates that SEC development at an early age is of crucial importance for ensuring a child's welfare (Salovey, Mayer, 1990; Sylva, Pugh, 2005; Blyth, Weissberg, Durlak, 2019; Durlak et al., 2011), and SEL program contribution is especially emphasized in this sense (Haggerty, Elgin, Woolley, 2011; Bierman, Greenberg, Abenavoli, 2016). If observed from the perspective of early childhood and preschool age, children's social competences significantly facilitate the interaction with peers and adults, while emotional competences remain important for supporting understanding and expressing feelings (Alzahrani et al., 2019).

In the context of overall early childhood and preschool education, along with the parents, educators are "the second most important" persons with a key role in acquiring and improving children's social and emotional competences, and their role shows positive outcomes in a given moment, during childhood and in the person's future life (McLaughlin et al., 2017). Starting from this assumption – educators' key role in enabling and supporting the development of children's social and emotional competences – it is considered that by developing their competences, the educators impact the development of children's competences (Ljubetić, Maglica, 2020; Ljubetić, Maglica, Vukadin, 2020).

Therefore, the goal of this paper was to investigate the level of self-assessed social and emotional competences in educators working with children of early childhood and preschool age. As with all other tools, self-assessment has certain limitations. When educators go through self-assessment, likely, they do not see their activities in the same manner as external observers would. Also, the educators' perception of their communication with families (Visković, Višnjić Jevtić, 2017), children, and colleagues can be different from the perception of the other party taking part in the interaction. Despite possible limitations, self-assessment remains a powerful tool for personal growth if used thoughtfully and carefully (Ljubetić, 2007). Also, it develops a strong foundation for social, emotional, and academic success (Hancock, Carter, 2016). Unquestionably, SEC (self-)assessment among different professionals is an important area with relatively little attention in the academic community (McKown, Herman, 2020).

2. Current study

Although it is an extremely important learning area aiming at acquiring vitally important competences, SEL is still not represented enough in the initial education of early childhood and preschool educators (Ljubetić, Maglica, 2020; Ljubetić, Maglica, Vukadin, 2020). The main motivation for this research was the need for SEL affirmation at all educational system levels, especially at the level of early childhood and preschool education.

This research aims to investigate the level of self-assessed SECs in educators of children of early childhood and preschool age and the following research problems are:

1) To investigate SEC level (self-awareness, self-management, social awareness, relationship skills, and responsible decision making) by using the self-assessment among educators.
2) To investigate the correlation between age and educator's SEC self-assessment.
3) To investigate the correlation between work experience and educator's SEC self-assessment.
4) To investigate the correlation between the level of education and educator's SEC self-assessment.
5) To investigate whether different SEC components are connected.

The research started from the hypothesis that the educators with greater work experience and a higher level of education shall assess their SEC as higher, and that different SEC groups shall correlate to one another.

3. Materials and Methods

Participants

N = 234 educators took part in the research. These were all female educators (N = 232) apart from one male educator and one participant who did not state his/her gender. The average sample age was M = 40.38 with SD = 9.53, and with the range from 22 to 62. The average work experience was M = 15.48 years, with SD = 9.73, and with the range from 0 to 40. Considering the level of education, the greatest number of participants had a college education (N = 148 or 63%), then a university degree (N = 81 or 34.62%) and finally, there were five participants with a specialisation study or academic title.

Measures

General Data Questionnaire and CASEL (*Collaborative for Academic, Social and Emotional Learning*, 2017) questionnaire entitled Personal Assessment and Reflection – SEL Competencies for School Leaders, Staff, and Adults were used in this research. General Data Questionnaire consisted of ten questions focusing on the data about gender, age, work experience, level of education, occupation, employment, county of the institution employing the participant, employment status, marital status, and the number of children in the participant's family.

CASEL questionnaire entitled Personal Assessment and Reflection – SEL Competencies for School Leaders, Staff, and Adults (2017) includes five subscales: self-awareness, self-management, social-awareness, relationship skills, and responsible decision making. Self-awareness subscale includes statements on emotional self-awareness, precise perception of oneself, self-confidence, and optimism. Self-management subscale includes statements on self-control, setting and reaching goals, adjustability, and organizational skills. The Social-awareness subscale includes statements on empathy, respect towards others, tolerating differences, and organizational awareness. The relationship skills subscale includes statements on communication, building relationships, managing conflicts, teamwork, and cooperation. The last subscale referring to responsible decision making includes statements on identifying problems, analysing situations, problem-solving, evaluation, and reflection as well as on personal, moral, and ethical responsibility. For the evaluation of each statement, the respondents used a scale with numbers 1 (rarely), 2 (sometimes), and 3 (often).

To inspect whether the five-factor model is appropriate to the original (*Personal Assessment and Reflection – SEL Competencies for School Leaders, Staff, and Adults*, 2017), confirmatory factor analysis was implemented, and it indicated that the subject data partially fits into the five-factor model (χ^2/df = 1.71; RMSEA = .05; GFI = .77). Considering the obtained indicators and original questionnaire structure, five total results were formed for five SEC subscales with higher results indicating a higher level of self--assessed SECs. Descriptive parameters for all five subscales can be found in Table 1.

Table 1
Descriptive indicators for SEC Questionnaire subscales

	n	**M**	**SD**	**Cronbach α**	**asymmetry**	**flatness**
Self-awareness	9	23.79	2.22	.62	-.86	.87
Self-management	8	20.51	2.40	.68	-.81	.32
Social awareness	5	13.41	1.35	.40	-.96	.79
Relationship skills	14	37.70	3.72	.82	-1.32	2.37
Responsible decision making	9	22.60	3.08	.79	-.59	.05
Total SEC result	45	118.01	10.28	.91	-.85	1.24

n – number of statements for each subscale

Procedure

CASEL instrument (*Personal Assessment and Reflection – SEL Competencies for School Leaders, Staff, and Adults*, 2017) was used for this research. It was translated into Croatian, and then back into English by two independent translators to compare it with the original and establish consistency. The instrument was adjusted to the needs of online distribution that is, it was formed in Google Forms. The research was implemented from March 2021 to May 2021. Participation was voluntary, and the participants could withdraw from the research at any given moment. The anonymity was ensured in a manner that the option of seeing the sender's address was turned off which the participants were informed about. The approval for the research implementation was provided by the Ethics Committee at the Faculty of Humanities and Social Sciences in Split (Class: 003-08/21-03/0002; REG. NUMBER: 2181-190-00-1-21-0010).

4. Results

To respond to the first research problem and to investigate SEC level by using the self-assessment of educators, the participants' responses were analysed in accordance with the Questionnaire subscales. The distribution of their answers is shown in Images 1 to 5. All distributions lean towards higher values, which indicates relatively high SEC self-assessment. Most participants evaluated their SECs with the highest marks (average total results on subscales range from 2.5 to 3.00). Less than 5% of the participants had results that were lower than 2 on almost all subscales. After the analysis of the obtained results, it was concluded that the first assumption was confirmed or that the research participants evaluated their SECs highly.

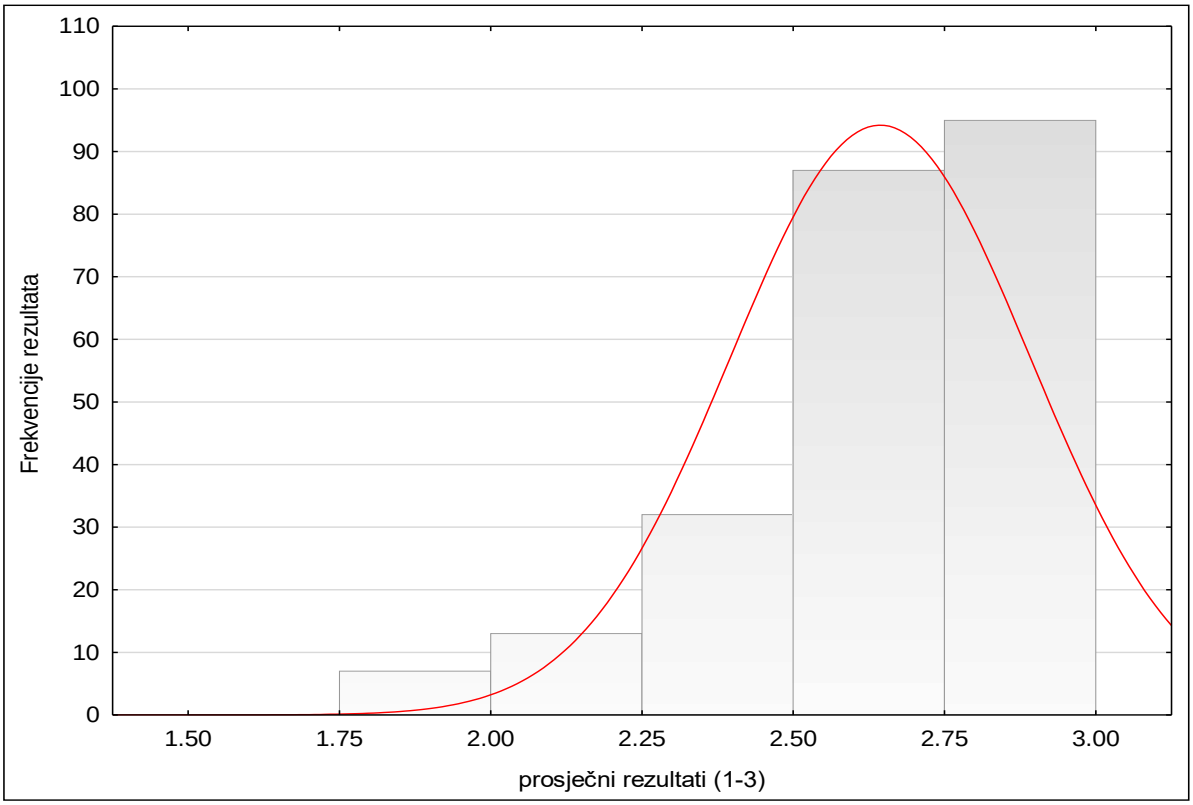

Figure 1. Results Distribution at the *Self-Awareness Subscale*.

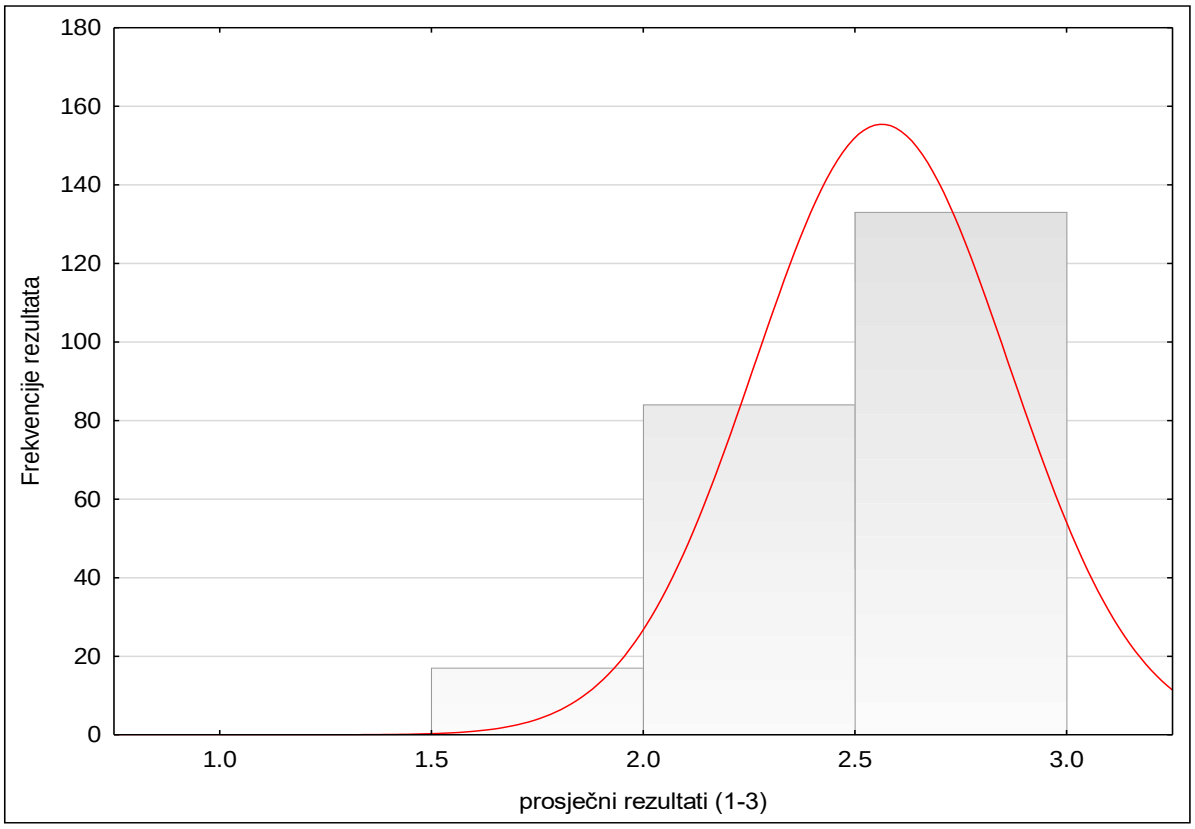

Figure 2. Results Distribution at the *Self-Management Subscale*.

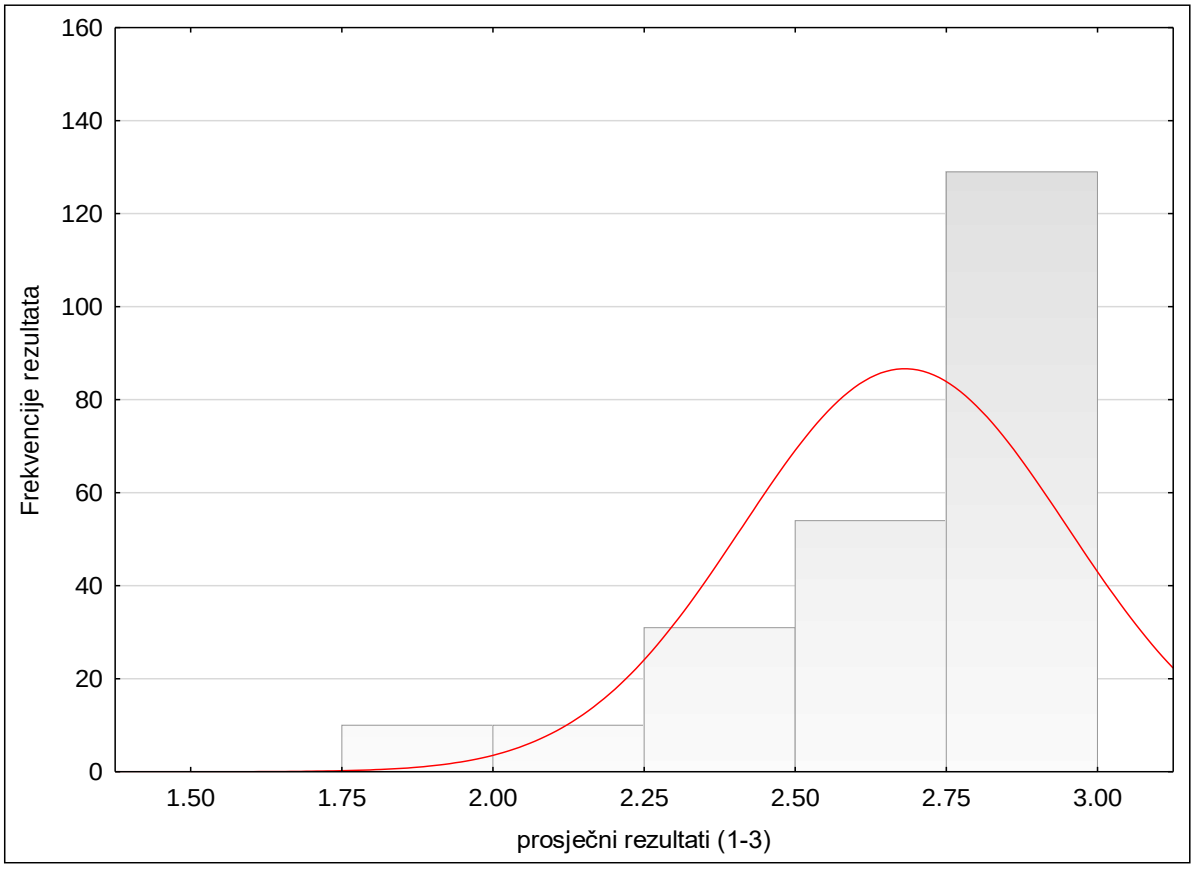

Figure 3. Results Distribution at the *Social Awareness Subscale*.

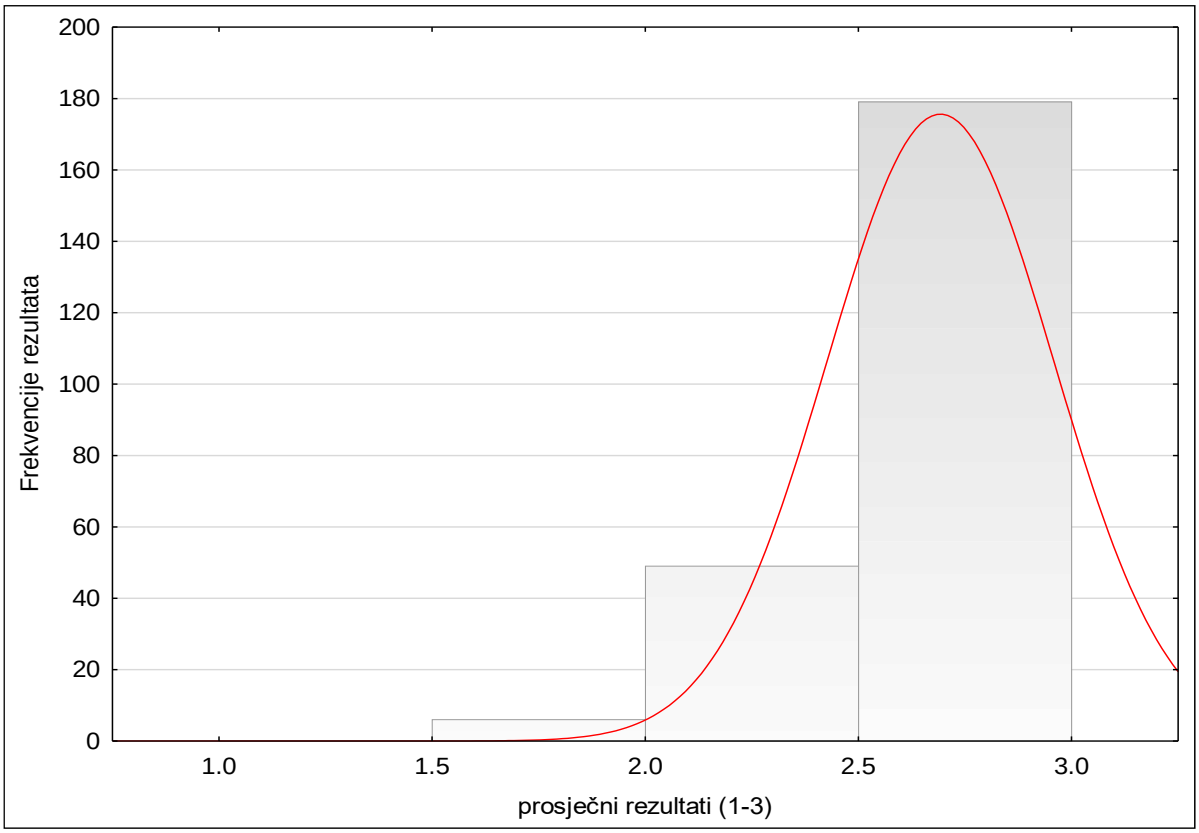

Figure 4. Results distribution at *Relationship Skills Subscale*.

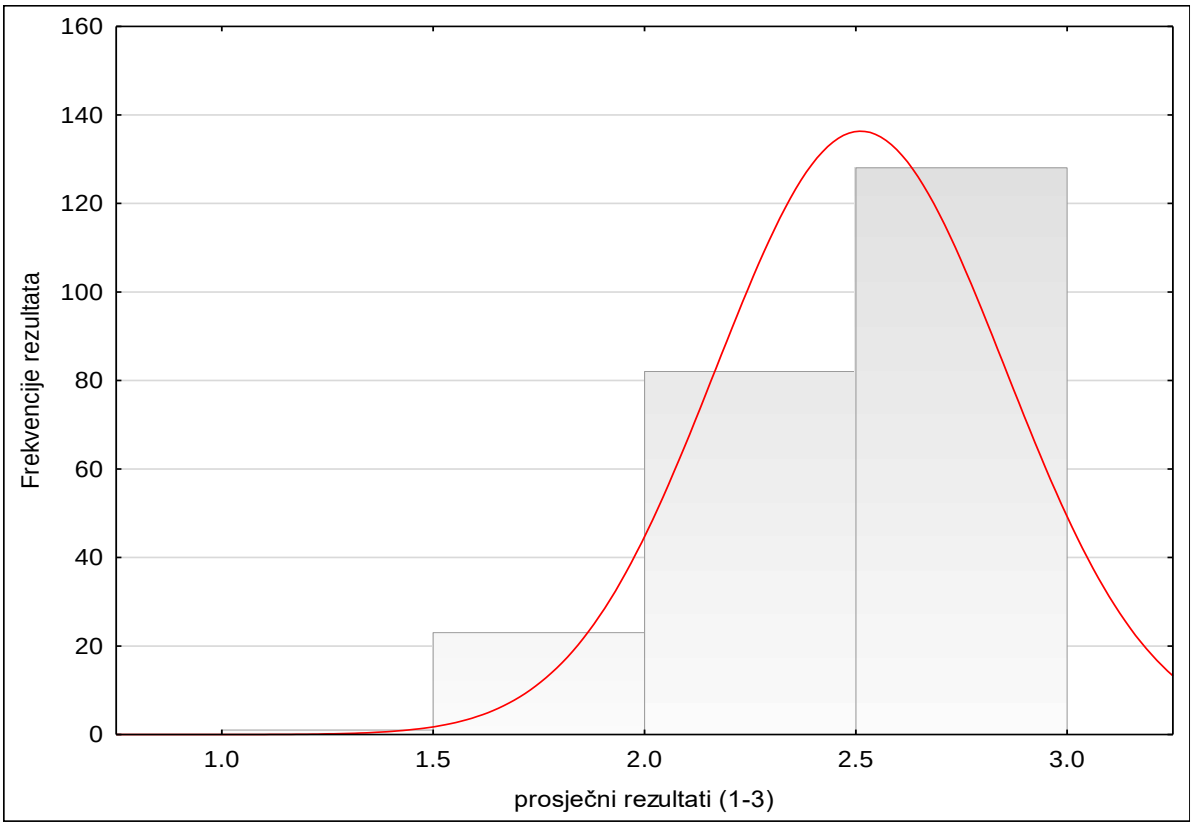

Figure 5. Results Distribution at the *Responsible Decision Making Subscale*.

To respond to other research problems, correlation analysis with the parameters of age, work experience, education level and socio-emotional competences (Table 2) was implemented. Considering that only five participants chose specialist study or academic level as their education level, the data provided by the participants with college or university degrees (n = 229) were used in the analysis. Age did not prove to be connected to any SEC group. However, a significant correlation between work experience and self-assessment with regard to responsible decision making was established. The respondents with longer work experience evaluated their responsible decision making as higher. Education level is connected only to the results at the self-management subscale. Therefore, it is possible to conclude that the respondents with a university degree assess themselves as more successful in self-management in relation to other respondents. As for the last research problem, it can be concluded that the results at SEC subscales are mutually connected. The weakest connection was established between self-management and social awareness, and the strongest was between relationship skills and responsible decision making.

Table 2
Correlation analysis of SEC, age, education level and work experience (n = 229)

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**
1 age								
2 work experience	.93**							
3 education level	-.11	-.13*						
4 self-awareness	.04	.08	.03					
5 self-management	-.03	.04	.14*	.58**				
6 social awareness	-.05	.03	.04	.45**	.38**			
7 relationship skills	-.01	.03	.11	.53**	.48**	.56**		
8 responsible decision making	.11	.17*	.13	.50**	.53**	.48**	.62**	

**p<.05; **p<.01*

To investigate whether there are any differences between the respondents with a college degree and respondents with a university degree with regard to SEC development, five t-tests were implemented (Table 3). A relevant difference was determined with two parameters: self-management and responsible decision making. In both cases, the participants with a university degree showed higher results in relation to the participants with a college degree. In other words, they evaluated their competences higher. As for other parameters, there were no significant differences. Greater education level contributes to the improvement of educational competences. Therefore, this might be the best confirmation of the justifiability of the efforts put into founding the graduate study for early and preschool education in the Republic of Croatia.

Table 3
Comparison of participants with different education levels as regards to SEC

	$M_{všs}$	**$SD_{všs}$**	**M_{vss}**	**SD_{vss}**	**T**	**df**
Self-awareness	2.64	.26	2.67	.22	-.090	227
Self-management	2.53	.31	2.64	.25	-2.85**	227
Social awareness	2.67	.28	2.71	.25	-1.21	227
Relationship skills	2.67	.27	2.74	.24	-1.82	227
Responsible decision making	2.48	.35	2.58	.31	-2.09*	227

**p<.05; **p<.01*

5. Discussion

Although there have been intensive research activities in the field of SEL and similar competences within the last few years, when it comes to the competences of the educators working with children of early childhood and preschool age, the lack of literature is obvious. This group remains most commonly disregarded, and as there is no logical explanation for it, this research tried to contribute to the field of SEC research of the educators working with children of early childhood and preschool age. Schonert-Reichl (2017) confirms this by stating that, although teachers and educators are the main drives for SEL programs in schools and institutions for early childhood and preschool education, their role in promoting SEL and their SECs is not focused on enough.

The goal of this research was to inspect the SEC of the educators working with children of early childhood and preschool age by using the self-assessment method. The results indicate that most participants assessed their SECs with the highest grades. During the assessment, less than 5% of the participants had results lower than 2 on almost all subscales. Such high SEC assessment results may be connected to the results of the research implemented by Ljubetić, Reić Ercegovac, and Draganja (2019). In the latter research, the authors emphasize that it might be possible that the educators realized how important SEC is for the life of children, both at the current stage and in the future, and therefore they paid greater attention to encouraging their development. As emphasized by Zych and Llorent (2019), to improve children's SEC, educators' SEC has to be at a high level as well. Furthermore, the participants' age did not prove to be connected to any SEC group. However, the relevant connection was established between the work experience and self-assessment of responsible decision making. Participants with greater work experience evaluated their responsible decision making as higher. This might probably be explained by the fact that longer work experience in certain professions provides greater safety and self-confidence while making certain decisions. Obtained results might be connected to the research implemented with thirty educators in Australia (Blewitt et al., 2021), which showed that a lack of professional experience presents an obstacle in developing SEC for one part of the participants. The responsible decision making aspect consists of many dimensions (identifying problems and analysing situations, problem--solving, assessment and reflection, and personal, moral, and ethical responsibility) which are crucial for an individual's productive functioning and harmonious functioning of a work collective as a whole. The participants are aware of the importance of both their personal and children's SEC, and they emphasize the importance of training their skills and assisting the wider community in developing the same (Ibidem).

Concerning the level of education and educator's SEC self-assessment, the results indicated that the education level correlates only with the results at the self-management subscale. Therefore, it can be concluded that the participants with a university degree evaluate themselves as more successful in self-management in relation to other participants. When talking about the connection between the level of education and educators' SEC self-assessment, in research implemented in Hong Kong, the participants (educators) responded that future educators should be provided with more opportunities for personal growth and SEC improvement during their studies. It is concluded that more attention has to be paid to the social and emotional development of small children during the education of future educators and that this should be the main component of the educational teaching program in early childhood (Lam, Wing, 2017).

The hypothesis this research started from – educators with greater work experience and a higher level of education shall evaluate their SEC as higher – was proved to be right. Apart from the mentioned, a mutual significant correlation among different SEC components was established. The greatest correlation was established between relationship skills and responsible decision making, while the weakest correlation was established between self-management (self-control, setting and reaching goals, adaptability, and organizational skills) and social awareness which is almost not surprising. It is expected that lower results for the self-management construct dimensions negatively reflect on the social awareness components (empathy, respect for others, tolerating differences, organizational awareness). It is important to emphasize that extremely low reliability was established at the social awareness subscale. Therefore, further research in this area is suggested. The research implemented by Blewitt et al. (2021) suggests that educators working with children in early childhood recognize the complexity of social and emotional skills and correlations existing among certain SECs. To provide better support for the social and emotional development of children, the participants stated several key categories: (1) fostering and regulating the relationship between an educator and a child; (2) supporting SEL in everyday interactions and practice; (3) using physical surrounding to encourage SEL, and (4) cooperating with other experts working in the field of early childhood and preschool education (Blewitt et al., 2021).

A reliable relationship with a caring adult actively promoting the development of social skills and emotional competence is the key to the healthy social and emotional development of small children (Simpson et al., 2016). Educators play an important role in supporting SEC development in children as most children aged 3 to 5 spend most of their time in institutions for early childhood and preschool education (Denham et al., 2012; according to: Rakap et al., 2018). Therefore, Schonert-Reichl, Kitil and Hanson-Peterson, (2017, p. 138) emphasize: "If we do not exactly understand the benefit of educators and their impact on children's SEC, we can never completely know whether and how we have to promote SEL in the institutions for early childhood and preschool education".

6. Research Limitations

This research was implemented at the time when the COVID-19 pandemics escalated or during the lockdown, "hybrid" teaching and work from home. This might have impacted the participants' answers. Therefore, it is suggested that the same research is implemented in more stable conditions and that the results of the two researches are compared.

Conclusions

SEC development in children of preschool age is crucial for their long-term school and life success, and this is the period when the educators, along with the parents, play the key role (Ferreira et al., 2021). Despite the great and acknowledged importance of SEC field, there is still a lack of empirical research in this area, especially when it comes to the educators of children of early childhood and preschool age. The results of the implemented research indicate educators' high perception of SEC considering the studied sample. Furthermore, all SEC subgroups are significantly interconnected which confirms the initial hypothesis. The age of the participants is not connected to SEC self-assessment, and work experience is connected only with the responsible decision-

-making subscale but not with other SECs, so this hypothesis cannot be confirmed. The level of education is connected only to the self-management subscale while the results indicate a significant difference in self-management and responsible decision making, so the hypothesis is partially confirmed.

Within the last two centuries, without any doubt, we are witnessing an extensive improvement in children's SEC research. Educators, teachers, parents and other members of the society recognize that SEC is a basic life requirement and that it is their joint responsibility to provide children with the possibility to develop those contributing to their health, welfare, and overall life success (Schonert-Reichl, 2017). Taking the above mentioned into consideration, and investigating all the benefits that educators may provide to children under their care via their SECs, the need and importance of further research in this field is obvious.

Disclosure statement

No competing interests to declare.

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PRE-SERVICE TEACHING PRACTICE FOR TEACHER EDUCATION STUDENTS

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Summary

Pre-service preschool and primary school teachers need to be trained during their studies to work with young learners. Their training involves not only theoretical, field-related academic courses, but also practical aspects of working with children, covered in the form of pre-service teaching practice carried out in preschool and primary school educational institutions. The aim of this paper is to present, based on a descriptive method, the pre-service teaching practice conducted within the English Language Module (ELM) of the Teacher Education Faculty in Belgrade. The English Language Module is an elective academic module and the students who finish it are equipped with the knowledge and skills necessary for teaching English in the lower grades of primary school and preschool institutions. The authors of the paper also look at the impediments to the ELM teaching practice imposed by the COVID-19 pandemic and how these obstacles were successfully overcome.

Keywords: pre-service teaching practice, English Language Module, preschool teachers, primary school teachers, COVID-19.

Introduction

Teacher education involves a balanced ratio of theoretical subjects and teaching practice. Theories of didactics and pedagogy emerged from practical experience and developed over time to become a solid and inevitable foundation of teachers' practical work (Protić, 2008, p. 216). These two aspects are not in opposition to one another, but rather they correct and complement each other (Ibidem, p. 217). Teacher training relies heavily on pre-service teaching practice as a crucial aspect of the preschool and primary school teachers' preparation for their pedagogical and educational role. At the Teacher Education Faculty of the University of Belgrade, the practical aspect of the professional education courses (pedagogy, didactics, psychology, and subject methodologies) is experienced through phased internships, and honed during the days students spend in accredited preschool and primary school institutions. During these visits, they observe in-service teachers at work and develop and shape their own professional and content-related skills. Given the fast pace of modern technology development, our faculty trains students not only to apply various teaching methods, but also to use the most up-to-date didactic tools in their lesson planning, materials design and classroom work.

Teacher education programmes obviously "face increasing responsibility to prepare new teachers who can enhance learning in all students" (Sandholtz, 2011, p. 27). Highlighting the need for a change of teaching goals and practices, K. Zweeris et al. (2022) confirm that "teachers are increasingly expected to contribute to student development

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in ways that transcend the acquisition of knowledge and skills." And in order to support teachers in this process, they say, it is important to gain insight into the goals that underlie their teaching practices and activities, which are related to curriculum orientations (Zweeris et al., 2022, p. 1). N. Vilotijević (2012) also concludes that: "Curricular orientation in teaching creates a suitable climate for a boost of innovative activity that will have a stimulative effect on both teachers and learners and thus enable every individual to be a winner, i.e., to be successful according to their own capabilities" (Vilotijević, 2012, p. 26).

Since modern-day professional success implies both the mastery of one's field of expertise and substantial knowledge of other relevant fields or disciplines, many tertiary-level curricula are inter-disciplinary. For this reason, integrated teaching modules are gaining momentum in education. Furthermore, research has already shown that "integrating languages with other school contents from the beginning of formal education can (…) lead not only to students' better communicative competence, but also to an improvement in their general cognitive development" (Janković, 2015, p. 133). The fields of integration may vary across different levels of education or areas of expertise, and can be specifically tailored to suit certain age groups. Regardless of the level of cooperation, the main purpose of gathering professionals from different fields around a common educational task is to make space for an integrated and simultaneous development of students' cognitive and communicative skills (Mirić, Đorović, 2015, p. 511). The area of foreign language teaching is perfectly suitable for reaching that goal.

With children's broader development in mind, the above mentioned research (Janković, 2015, 2014a) resulted in introducing an innovative approach to English language teaching at the Teacher Education Faculty in Belgrade. The approach underlies and stems from a comprehensive curriculum consisting of a series of courses open to integrating non-linguistic contents into English language teaching. Its aim is to equip future preschool and primary school teachers with the professional skills and strategies necessary for them to apply the stated integrated approach to language teaching. Above all, through their agency, it should lead to children's effective language learning and efficient general education (Janković, 2014b). Thus, based on permits issued by the Ministry of Education, besides their core curriculum, our students have an opportunity to receive additional training for teaching in other subject areas, such as English in the first cycle of primary education and preschool institutions, as well as computer science in the higher grades of primary school. Both additional areas follow the principles of students' core academic training by putting their theoretical knowledge and practical skills to use through pre-service teaching practice.

In further text, the authors of the paper look into the essence of pre-service teaching practice, and provide an overview of the English Language Module at the Teacher Education Faculty in Belgrade. It is followed by an in-depth analysis of the methodological conceptualisation of the students' teaching practice, which is an inextricable part of the English Language Module. The authors also present the experience of conducting teaching practice in the period of the COVID-19 pandemic and how the impediments caused by it were successfully overcome.

1. The essence of pre-service teaching practice

Academic education means much more than studying and learning. It means preparing students for the role of future professionals. In order for them to become experts in any area of human study, putting theoretical knowledge into practice is essential. For pre-service teachers, that kind of professional training starts in kindergartens and schools. "Pedagogical internship allows participants to refine skills and confront the acquired theoretical knowledge with the practice of education," because hundreds of hours of internship "allow teachers to apply their knowledge in various concrete and real situations arising during teaching" (Zacłona, Gaweł, 2018, p. 53).

Classroom practice depends on the cultural context and professional traditions, and is domain-specific and goal-specific as well (OECD, 2009, p. 97). Cohen et al. state that educational settings may also vary considerably, from broad societal macro-contexts to specific local or individual micro-contexts in a particular school, class or lesson (Cohen et al., 2010, p. 1).

> A student teacher is faced with the exciting but challenging task of assimilating a variety of contexts very rapidly when embarking upon teaching practice, whether during a course of initial teacher pre-service education or as a newly qualified teacher entering a first appointment in a school (Ibidem).

Let us, then, define our title concept, which is of crucial importance for teacher training. *Teaching practice* is the period that student teachers, i.e., pre-service teachers, spend teaching at a school as part of their training[2]. More specifically, it may be considered as "an integral part of a teacher education programme aimed at providing student-teachers an opportunity to put into practice their theoretical knowledge in a real school-life situation"[3]. As "teaching practice has come to be recognised as one of the most important parts of the teacher education program" (Farrell, 2001, p. 49), Marais and Meier also conclude that it is "a valued and a very necessary part of teacher education for students to become competent teachers," with student teachers being exposed to a range of experiences while working in classrooms and schools (2004, pp. 220-221).

Spanning a slightly broader scope of application, the term *practicum* is also often used to mean "a course of study designed especially for the preparation of teachers and clinicians that involves the supervised practical application of previously studied theory"[4]. It is also mentioned in the context of "the importance student teachers attribute to the practical experience of their teacher education program, the practicum" (Smith, Lev-Ari, 2006, p. 289). The application of knowledge in practicum is in the focus of other authors, as well (O'Conner et al., 2018; Mattsson et al., 2011; Farrell, 2001).

[2] *Collins Cobuild Dictionary*, retrieved from: https://www.collinsdictionary.com/dictionary/english/teaching-practice (date of access: May, 2022). It should be noted that the above phrase is mainly used in British English, whereas the corresponding phrase in AM English is 'practice teaching'.

[3] https://imamhamzatcoed.edu.ng/index.php/programmes/teaching-practice (date of access: May, 2022).

[4] *Merriam Webster Dictionary*, retrieved from: https://www.merriam-webster.com/dictionary/practicum (date of access: May, 2022). According to *Britannica Dictionary*, practicum is "a course of study for teachers, doctors, nurses, etc., that involves actually working in the area of study and using the knowledge and skills that have been learned in a school", retrieved from: https://www.britannica.com/dictionary/practicum (date of access: May, 2022).

Finally, the concept of *praxis* is also commonly used in reference literature. While it may refer to different contexts of application (such as ESOL examinations)[5] or aspects of educational work, such as 'praxis pedagogy' (Arnold, Mundy, 2020) or 'critical pedagogy and classroom praxis' (Braa, Callero, 2006, p. 357), etc., *educational praxis* implies "everyday practices of those involved in education and the complex conditions in which praxis is individually and collectively enacted" (Mahon et al., 2020, p. 20). That makes it close to the general concept of *teaching practices*, which reflect beliefs and ethics about the teaching and learning process[6] or, more specifically, "provide a range of ways in which to engage students from all number of backgrounds to gain knowledge, perfect skills and apply that knowledge and skills to successfully undertake employment within industry and (…) community"[7]. An important precondition for that, according to Popović and Anđelković (2020, p. 69), is "building stronger links between universities and the institutions in which they will work", as well as stronger inter--institutional integrations and shared responsibilities for the outcomes of the students' learning. The authors add that enabling students to develop their professional competencies by providing them access to practical work creates opportunities for improving the quality of work at both universities and students' future workplace (Ibidem).

In line with that, by observing teacher preparation from the mentoring perspective, Orland-Barak (2011, p. 144) recognises three important settings of professional learning: theoretical learning in practice, practical learning in practice, and academic learning at the university. Mattsson et al. (2011, p. 5) add that "preservice teachers are expected to develop theoretical and reflective capacities as well as practical skills and knowledge". However, successful classroom work, which includes pre-service teaching practice as well, implies both classroom management – i.e. children's orderly behaviour, and effective instruction – i.e. their true engagement in the learning tasks (Doyle, 1986, in: Sandholtz, 2011, p. 28). The teaching career is, obviously, extraordinarily multifaceted.

By stepping out of the academic amphitheatres and stepping into the (pre)school classrooms, even if only temporarily, pre-service teachers assume the role of in-service teachers. At that moment, they are no longer recipients of instruction, but rather instructors themselves. The effectiveness of their teaching practice depends largely, but not only, on the choice of the most suitable teaching methods, activities, and materials for specific groups of learners. The forms of classroom communication (verbal, non-verbal) and space organisation (arrangement of objects, physical distance, etc.) are largely age-dependent too (Jachimowicz, Sikora, 2020, pp. 116-117), and will be important factors in a pre-service teacher's lesson preparation.

Knowingly or not, a single teacher thus becomes simultaneously immersed in several mutually intertwined dimensions of classroom responsibility: 1) pedagogical – which requires of them to activate all their pedagogical-psychological and didactic--methodological skills; 2) subject-specific – which presupposes their mastery of and self-confidence in content delivery; 3) socio-cultural – as facilitators in creating a welcoming atmosphere for students coming from different backgrounds in the rapidly changing world; and 4) administrative – because every teacher's job implies complying with system rules and documenting institutional work through various forms, sheets, and record keeping.

[5] https://www.eslteacheredu.org/esol-praxis-exam/ (date of access: May, 2022).
[6] https://www.igi-global.com/dictionary/teaching-practice/55861 (date of access: May, 2022).
[7] https://federation.edu.au/staff/learning-and-teaching/teaching-practice (date of access: May, 2022).

The pre-classroom and post-classroom stages of their work, which require preparation of lesson plans and materials, examination of students' assignments or reflection on the work done or situations experienced at work, will only add to this list of dimensions of teachers' multiple responsibilities. Due to the specific nature and needs of young learners, for teachers working in early childhood and lower primary education, a single 30- or 45-minute lesson often requires even more mental and physical engagement than working with other age groups.

Comprising essential ingredients of work with young and very young learners, all the above mentioned aspects of pre-service teaching practice were borne in mind when the integrated English Language Module was designed and launched in 2017 at the Teacher Education Faculty in Belgrade (Janković, 2014a, 2014b).

2. The English Language Module

Foreign languages for specific purposes at non-philological faculties and professional academic subjects are inextricably linked because language teaching is based on the subject matter, content, and terminology of the subject-specific field. In addition, it enables students to engage in matters related to their future profession at the academic level through a foreign language (Janković et al., 2019, p. 93). With this in mind, the Teacher Education Faculty in Belgrade offers its students the English Language Module accredited by the Ministry of Education of the Republic of Serbia.

The English Language Module (ELM) is not a compulsory academic course for all students who take up English as a foreign language at the Faculty. It is intended for the students of preschool and primary school education who have a higher level of knowledge of English and who pass the ELM entrance exam. The ELM programme is integrated, which means that, apart from improving their skills in the language itself, and learning about the English language teaching (ELT) methodology, students expand their knowledge of other professional and (pre)school subjects in English as well. Lessons are held by teams of experts consisting of an English language professor/teacher and professors of the relevant (pre)school or academic subjects. The subjects related to the ELT methodology and pre-service teaching practice, as well as the English-related courses at master's degree, are taught by teachers of English only.

The integrated ELM curriculum includes 15 subjects taught in English as a medium of instruction (EMI). There are three compulsory subjects for both pre-service preschool and primary school teachers: English Language I (GE/B2), English Language II (ESP/B2+), and the English Language course at master studies (ESP/C1+)[8]. Apart from these compulsory subjects, students complete 12 elective courses, most of which are based on integration with other content areas relevant for teacher training (Table 1). The syllabus of every ELM subject includes a theoretical part intertwined with or followed by practice exercises conducted in the form of project work, individual study assignments, group presentations, literature discussions, problem solving, or internship in preschool and primary school institutions.

After teaching students how to successfully integrate the most typical and relevant contents of other core courses for children with English language activities for young and very young learners, we gradually redirect their mindset from play-like forms of

[8] GE = General English; ESP = English for Specific Purposes; EMI = English as a Medium of Instruction. B2, C1 = proficiency levels according to the *Common European Framework of Reference for Languages*.

language learning to academic forms of reasoning about language teaching. A milestone course in their professional training in the senior years of study is a psychology course in English, which relies on students' previous experience in the areas of developmental and educational psychology. Having previously gained such knowledge in the major courses conducted in their native language – Serbian, the students now engage in serious discussions on important psychological and pedagogical issues in English. With this course as a lead-in, the other 3rd-year ELM electives make the backbone of students' preparation for work with young learners. This set of courses will be further built upon in their 4th year of education and rounded off in their Master studies.

Since the English Language Module spans all the four years of undergraduate studies and an additional year of master study, after successful completion of the programme, with ca. 500 lessons of instruction and 60+ ECTS gained in English, these Masters of Education in primary teaching or early childhood education are well equipped with knowledge and skills necessary to teach English in lower primary school grades and kindergartens.

Table 1
An overview of the integrated ELM curriculum

VYL / YL	**Compulsory courses**	**Elective courses** (EMI)
1st year	English I – GE	Elective course 1 (English + Music + Physical Education)
2nd year	English II – ESP	Elective course 2 (English + Art + Educational Technology) Elective course 3 (L1/Serbian + L2/English + Children's Literature)
3rd year		Elective course 4 (English + Developm. and Educat. Psychology) Elective course 5 (Planning English Language Teaching) Elective course 6 (**Pre-service EL Teaching Practice I/ Observation**)
4th year		Elective course 7 (English + Mathematics + Science) Elective course 8 (Didactics and ELT Methodology) Elective course 9 (Organising Activities in EL Teaching) Elective course 10 (**Pre-service EL Teaching Practice II/ Teaching**)
Master	English – ESP	Elective course 11 (English Language Teaching course) Elective course 12 (English Language Teaching Methodology course)
Integrated general and professional courses underlying pre-service teaching practice:		Music, PE, Art, Educational Technology, Serbian Language (L1) and Children's Literature, Mathematics, Science and Social Studies, Developmental and Educational Psychology, Pedagogy and Didactics, ELT Methodology.

3. English Language Teaching Practice

Language teaching practice makes a central part of students' preparation for work with young learners. Two courses (marked as *Pre-service English Language Teaching Practice I and II* in the table), conducted respectively in the 3rd and 4th years of study, make not only an essential ingredient of pre-service teachers' education, but the core of the ELM curriculum and students' professional training. Several other elective courses are conducted in the first semester of each of the two academic years to prepare the students for teaching English in the months to follow.

The English Language Teaching Practice (ELTP) takes place in the second semester, parallel with the students' core Pre-service Teaching Practice (PsTP), which is conducted in the Serbian language and focused on students' university majors[9]. The experience they gain from their core curriculum and teaching practice in majors specifically oriented to young learners provides a necessary basis for ELM students' practice extension in English. The knowledge, skills and strategies developed in the pivotal professional subjects are easily transferable to the context of foreign language learning, while the subject-specific aspects of teaching English are mastered through the other ELM courses prior to the beginning of practice sessions. The organisation of students' activities in ELTP follows the model of their general PsTP, gradually progressing in requirements from simpler to more complex tasks.

During these institutional visits, for which they present an official recommendation letter from the Faculty, ELM students first observe lessons held by in-service teachers and record their observations in specially designed forms. This is followed up by group discussions on the experience they gained in different hosting institutions. In the next stage, their teaching practice includes additional lessons of observation, but also planning and organising several isolated activities in agreement with the host teacher. Finally, ELM students prepare a complete lesson plan and independently hold a demonstration lesson that is evaluated by the host teacher and the university mentor. Prior to COVID-19 pandemic, all activities were conducted on-site. With its outbreak, most of the work got the form of emergency remote teaching and learning (Tanasijević, Janković, 2021, p. 168), after which it has preserved the better aspects of blended learning.

4. Pre-service English Language Teaching Practice I

In the third year of the academic and ELM study, both preschool and primary school pre-service teachers attend the course *Planning English Language Teaching*, where they are taught how to prepare lesson plans for teaching English to young and very young learners. Special attention is paid to planning the key stages of a lesson. Students are presented with different activities for starting and ending the lesson, as well as different forms of classroom organisation and management. They are also shown video materials which present native speakers of English or other experienced teachers in action. Podcasts with experts speaking about quality teaching are discussed, too.

[9] It should be noted that students' core teaching practice is based on cycles of on-site observation and/or teaching, with the number of lessons they spend in teaching practice gradually rising with each year of study: 1st year (pedagogical-psychological practice) – 2 weeks; 2nd year (didactic practice) – 3 weeks. // observation 3rd year (methodological practice) – 4 weeks; 4th year (methodological practice) – 5 weeks. // observation/teaching.

Based on these models, students are prompted to think about effective ways of eliciting talk with pupils, holding their attention, and motivating them to participate in activities. The types of activities include, for example: Listen & Do; Listen & Identify; Total Physical Response (TPR) activities; Memory games; Miming; vocabulary practice games, speaking with support, role play, etc. For the mentioned lesson stages students prepare activities assigned by the university tutor. They present their work in classes and simulate activities with their peers. Subsequent group discussions help them improve their planning and performance.

The first teaching practice course for ELM students, *Practical Aspects of English Language Teaching I* is, in effect, the extension of the previously described course. Having learnt how a lesson is properly structured, students are given Lesson Observation Sheets, specially designed to suit the purposes of English language teaching. Since the first round of their core methodological practice is based on observation of professional teachers at work, their first ELM practice course follows the same principle. The basic document that students have to familiarise themselves with is the *National Curriculum for English*, which makes part of the *National Curriculum for Primary Schools*. As it does not contain prescribed content for English lessons in preschool institutions, students of preschool education are advised to refer to the new general national programme for preschools – *Years of Ascent* (*Godine uzleta*).

During the semester, pre-service primary school teachers watch recorded lessons of English for the first four grades of primary school (prepared and streamed by the national TV service during the pandemic), while pre-service preschool teachers observe foreign lessons for kindergarten children available on the Internet and recognised as models of good teaching practice. As the course progresses, students of both departments choose one lesson for each of the four age-groups pertaining to their area of study, and then complete and submit four lesson observation sheets accordingly. Meetings with them are conducted online, on the Microsoft Teams platform. It is also used for presenting video materials, synchronous and asynchronous communication, and group discussions. Google Drive is used for uploading a variety of lesson materials, videos and podcasts from the Internet, and for the submission and correction of students' assignments, i.e., lesson observation sheets (LOSs).

The final observation task takes place at the end of the teaching season, in May, when students visit schools and preschool institutions for their core practice in the majors. During the four weeks of PsTP, they are required to observe one more lesson of English on-site, fill in their fifth lesson observation sheet with a detailed description of the activities held by the professional English teacher and discuss it with the group. All students' assignments (LOSs 1-5) are read and evaluated by three English language teachers, who check them for: a) task completion (clarity in presenting the activities), b) English language quality (B2-C1), and c) fulfilment of methodological requirements in the description of the observed online lessons.

5. Pre-service English Language Teaching Practice II

In the fourth year of their academic and ELM study, preschool and primary school pre-service teachers attend two courses of crucial importance for their teaching practice. These are: a) *English Language Teaching Methodology*, in which they study, revise, and discuss all the relevant aspects of teaching English, and b) *Organising Activities in*

English Language Teaching, where they invoke their experience with past ELM courses and contemplate preparing and organising activities for young learners. Special attention is paid to clear presentation and fulfilment of the methodological aims of a lesson and the integration of all language skills. That means that their lesson plans must include suitable combinations of the four macro skills (listening, speaking, reading, and writing) and all the micro skills (pronunciation, vocabulary, and grammar) with communicative functions as well. During the semester, they are shown additional video materials which present expert teachers of English working with young learners.

Given the fact that they have plenty of obligations related to their core methodologies and teaching practice in spring, students complete their lesson plans in English in the first semester. To present their activities, students use Lesson Plan Sheets, a replica of the previous lesson observation forms. The lesson plans must be based on the guidelines provided in the aforementioned *National Curriculum for English* for the first four grades of primary school and on the general recommendations in the *Years of Ascent* for preschool children. However, in this course students do not choose the lesson topic, but are assigned a teaching unit for each age group by the university tutor.

Apart from the most important content, which is the description of activities themselves, students' attention is particularly drawn to the reasonable timing of the exercises in different stages of the lesson, in terms of both their duration and distribution (TTT and STT)[10]. Special requirements refer to the quality of the language used to present the planned activities (C1). Besides planning class activities, they are expected to design additional teaching materials for lessons with children of different age groups. As with the previous course, the lesson observation sheets are checked, evaluated, and marked by three English language teachers, for task completion, the quality of the language, and the fulfilment of methodological requirements.

As in the previous year, the twin-course of *Organising Activities in English Language Teaching* is its extension: *Practical Aspects of English Language Teaching II*. The second ELTP course prepares students for the ultimate test of readiness to teach English. The beginning of the second semester is devoted to a supervised peer discussion on the students' assessed lesson plans. Students are encouraged to learn from their own and each other's experience based on teachers' written reviews and feedback gained in the group. In order to improve their planning and performance, they must correct all the parts of their lesson plans where some comments were placed. Additional video contents are presented and discussed. The work is done online, as in the previous practice course, to the point when the students are sent to schools and preschools for another round of on-site teaching practice. As mentioned earlier, their pre-service teaching practice in the fourth year lasts five weeks, which gives them ample time to perform a sequence of activities related to their English language teaching practice.

These activities in assigned primary schools or preschool institutions include: a) on-site observation of three lessons of English in different age groups; b) organising and holding two individual activities with children in two separate lessons of English conducted by the host teacher; and c) organising and holding independently one (if possible, more than one) full-time lesson of English assigned by the host teacher. For all these tasks students fill in the corresponding Lesson Observation Sheets (LOSs), Lesson Activity Sheets (LASs) and Lesson Plan Sheets (LPSs). The forms include students' descriptions

[10] Common acronyms in ELT methodology referring to Teacher Talking Time and Student Talking Time.

of and comments on the three observed lessons held by the in-service teacher(s); an explanation of and self-reflection on the two individual activities (as 'lessons learnt'); and a detailed description of all stages of the main lesson, with additional teaching materials (pictures, cut-outs, QR codes, links, etc.) presented at the bottom of the LPS. The Student Evaluation Form signed by the host teacher is the final document in the set. The exam date serves as a forum for the final post-teaching debate. With the results of that discussion and formative evaluation recorded during the course, the submitted documents make the basis for the final assessment of the student teacher. The mark assigned is a collective decision of the team of English teachers who tutored the student throughout the course and the entire English Language Module.

6. The impediments to the ELM teaching practice imposed by the COVID-19 pandemic

During the pandemic, the whole world was at a standstill, which initially incapacitated us all profoundly, but then made us reorganise our lives and our systems of work. However awkwardly, the disrupted systems of education relatively quickly adapted to the new virtual reality (Tanasijević, Janković, 2021). Teaching practice is one of the areas of education, and human practice in general, which was affected the most. Under largely restructured forms of teaching and mentoring at universities, and with in-service practitioners restricted in welcoming pre-service trainees and providing support to students in teaching practice, there was a great risk of decline in quality in most of the services that require regular pre-service on-site practice – medicine, education, engineering – to mention but a few. How serious some of these consequences may be, we have, sadly, already felt or are yet to feel.

While most of the world was preoccupied with the figures and quantities that dominated our lives via mass media, Teacher Education Faculty focused on the quality of education that our students needed, and hurried to provide, as quickly as possible, helpful and promising solutions. These were found in a number of tools suitable for teaching and sharing purposes, first and foremost, the Office 365 Service and its Microsoft Teams platform[11]. Additional platforms were found helpful for online meetings and teaching by some, such as Zoom, Edmodo, etc.[12]. Although this sudden shift to online education initially required a plethora of technical steps and instant instruction of the teaching staff, the Faculty managed to find solutions and adapt the already intricate timetables to the new conditions.

Most importantly, our students were quickly enabled to continue working by getting instruction and following lectures online, and cooperating with their professors and colleagues by exchanging working materials and assignments over the mentioned platforms and other electronic channels of communication. In collaboration with university mentors, schools, and preschool institutions, they were also enabled to participate in on-site teaching practice activities as much as the circumstances and regulations in force allowed it. At the outbreak of the pandemic, as everywhere else, it meant online collaboration of students and professors and small-group simulations at university, especially for exam purposes. In the following semesters, with restrictions gradually eased and permits from competent health centres received, our students were

[11] https://www.office.com/ (date of access: May, 2022).
[12] http://www.uf.bg.ac.rs/?page_id=30423 (date of access: May, 2022).

allowed to return to schools and kindergartens. The groups of students visiting them had to be smaller (not more than five), while academic mentorship was shared with the host teachers. In peer-observation rotation tasks, one student would do the teaching activities, while the others were engaged in observation.

The English Language Module groups are generally small, especially in the senior years of study, which partly made our reorganisation of work easier. One of the second--year ELM courses, *Creative Play in English*, prepares students to integrate Educational Technology with English language learning (Janković, Ristić, 2018) as well as art (Janković, Večanski, 2020), because "games are not only forms of entertainment but also present the possibilities to acquire new skills or exercise intellect and social abilities" (Struzik, 2018, p. 79) among both young learners and their teachers. Most of our other courses also include the use of digital contents and applications or sharing materials via Google Drive and similar tools. Therefore, it was not hard for our students to adjust to additional requirements in the new format once the sudden shift to emergency remote learning occurred. The fact that the first generation of ELM students was enrolled in 2017, and reached the phase of doing on-site 4th-year teaching practice in the spring of 2021, just after the strict measures were alleviated in the country, put our students in a slightly better position than the previous Faculty generation.

Since observation of lessons makes the essence of their teaching practice in the third year, the solution to the problem during the pandemic for the first ELM generation (in 2020) was found in watching video lessons of English available on the Internet (pre-service preschool teachers) and national TV service (pre-service primary school teachers). These were recommended by the university professors or students themselves, whose readiness to conform, cooperate, and even be of assistance in the phase of our mutual adaptation to the Teams platform was amazing and truly worthy of praise. Their Lesson Observation Sheets (as described in the chapter English Language Teaching Practice I) were submitted, examined, corrected, and resubmitted for evaluation in the asynchronous manner, and the peer discussions and mentorship held at the scheduled lesson time or through regular correspondence with the three teachers. The next generation's observation lessons were also mainly based on the video contents, and in 2022 our students finally returned to on-site teaching practice.

The same principle was followed in our students' fourth year for the greater part of the teaching practice course. Students' Lesson Plan Sheets, submitted and examined in the previous semester, were commented on by the teachers and discussed among the peers during our online lessons. Learning from their own and their colleagues' positive experience or mistakes helped them plan good or even better activities for the final on-site performance and evaluation. Integration of English language teaching and other preschool or school content areas was mandatory. At the end of the course, as indicated above, our students were allowed to visit schools or preschool institutions individually. They completed three lessons of on-site observation and two individual activities in either the same or different groups or classes of children, depending on the current situation in the assigned school or kindergarten.

When the time came for them to hold entire lessons independently, an interesting turn of events occurred. Not only was our very first student given an opportunity to hold two complete lessons in her hosting school due to the diligence she had shown, but our second-in-turn exam candidate even became a substitute teacher of English for

two weeks, as his host teacher had contracted the virus. What truly happened was that schools and kindergartens warmly welcomed our students as support, and the students themselves felt more than proud and encouraged to help in this, as in many other situations which concern work with children in need. As a matter of fact, many students of the Teacher Education Faculty volunteered at the time of the COVID-19 pandemic and in other emergency situations, considering it obviously their call of duty.

It does not surprise, then, that most of the ELM students were awarded the highest grade for their final teaching practice exam in English by the committee of three university English teachers. They had deserved such marks based on: a) the formative assessment during the semester; b) all the submitted exam materials – 3 Lesson Observation Sheets, 2 Lesson Activity Sheets, and 1 (or more) Lesson Plan Sheet(s) with additional materials presented; and c) the Student Evaluation Form signed by the host teacher[13]. The following generations of ELM students also managed to complete all their internship obligations in face-to-face work with children and host teachers. Being encouraged by their university teachers to always correct their work until they do their best, most of them truly achieve that goal. A similar example of the successful general pre-service teaching practice was found at Polish University of Applied Sciences in Nowy Sącz, as Z. Zacłona and B. Gaweł report:

> High marks awarded to students currently undergoing internships and only preparing for future work allows us to argue with the high degree of probability that the extent of the practical education included in the syllabus was well matched and proceeds correctly maintaining balance between theory and practice preferred by the various educational and specialist establishments (Zacłona, Gaweł, 2018, p. 57).

Conslusions

Early childhood education and lower primary education are the phases of children's growth which require knowledgeable and highly devoted professionals. Teachers to whom they are entrusted must be responsible, self-confident and carrying individuals who know children's psychology and are specifically trained for pedagogical work with young learners. In addition, they need to master various content areas in order to successfully prepare children for life. Pre-service teaching practice is the most important aspect of students' preparation for such work. Therefore, it makes a large part of their curriculum and professional training. With more than 400 hours spent working with children during their studies, they have an opportunity to master these professional skills.

[13] Our first student earned the following comment from her host teacher: "Student Marija S. deserves only words of praise for her diligence and devotedness shown during internship. Although she was not obliged to, she attended all the lessons in both shifts, gladly participated in the activities and built fine rapport with the pupils. She has deserved praise for her attitude towards work and the serious approach to materials design and lesson preparation. Her activities are very creative and well adapted to the pupils' age and abilities; she accepts advice, follows recommendations and always tries to think of and develop creative and interesting activities. She handles unpredictable situations very well and resolves them during the lesson effortlessly. What Marija lacks is experience, and I hope she will soon have an opportunity to gain it, and that her exceptional human and professional qualities, as well as her creative capacity will be recognised and acknowledged. I would especially like to commend her for her mastery of English, her pronunciation, and the lesson plan in English, […]. For me, as an English language teacher, it was a great pleasure and a real refreshment to work, if at least for a while, with student Marija S."
Signed by: D. Biljana (18th May, 2021)

With its series of courses which integrate some of the core contents for children's education in a foreign language teaching programme, the English Language Module of the Teacher Education Faculty in Belgrade prepares future preschool and primary school teachers for a progressive approach to teaching young learners. With a total of ca. 500 lessons of English for general and specific purposes, numerous tasks, assignments, as well as collaborative project work in the same language, it provides them not only with advanced knowledge of English itself, but also with the ability to apply their pedagogical and overall academic knowledge and skills working with children in English. As an elective course of study for small groups of students, it has its advantages and challenges, most of which proved to be successfully overcome at the time of the COVID-19 pandemic. The pre-service teaching practice that these high-performing students undergo, and the positive feedback they all receive from the host teachers, give their university teachers and mentors hope that the English Language Module will enable many more generations of preschool and primary school teachers to responsibly share their knowledge and skills with young learners.

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KNOWLEDGE OF NATURAL SCIENCES ABOUT FUNGI AMONG STUDENTS OF THE 1ST YEAR OF THE BACHELOR'S STUDY PROGRAMME OF PRESCHOOL AND ELEMENTARY PEDAGOGY

(*Renáta Bernátová*[1])

Summary

In the first part of the chapter, we discuss the issue of incorporating the science curriculum on fungi into the national curricula for pre-primary, primary and lower secondary education. We describe the content of the science curriculum on fungi in science and biology taught in primary school. In the second part of the article we present and analyse the level of science knowledge of students of the 1st year of Bachelor's studies in the study program of preschool and elementary pedagogy. The level of acquired science knowledge was measured by a didactic test of our own design, which contained 15 test items. The content of the testing was basic science material about fungi. The results of the testing showed that the students – future teachers have not acquired basic natural science knowledge about fungi at an adequate level.

Keywords: science knowledge, the topic of the fungi, didactic test, students of preschool and elementary education.

Introduction

Fungi are considered a separate realm in the Slovak school system. In the past, they were considered non-green plants. Fungi are organisms that we encounter on a daily basis and many of us don't even realise it. When you say fungi, people most often think of a group of edible mushrooms that they collect and that are part of their diet. Fungi, however, are a much more interesting kingdom of organisms than many of us believe them to be. It is true that compared to the other two kingdoms of organisms, namely plants and animals, the kingdom of fungi receives much less attention in the science education of children and pupils. The science curriculum about fungi is embedded in our education system in the educational area of Man and Nature.

1. National curriculum, educational area Man and nature and teaching about fungi

Curriculum about fungi is already part of the education of preschool children in kindergartens. In the National Curriculum for pre-primary education in kindergartens, teaching about fungi is included in the sub-area of Plants, in which only one content standard (out of a total of thirty-eight listed content standards) is devoted to fungi: „Creates activities in which children learn about the benefits of fungi (yeast, edible mushrooms), but also become aware of their dangers (moulds, poisonous mushrooms)" (State curriculum for pre-primary education in kindergartens, 2022, p. 49).

In the Innovated National Curriculum for Primary Education, the teaching of fungi is incorporated into the sub-area of Plants and Fungi, which is taught within the subject of natural science in the 3rd year of primary school. In the State Educational Programme

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for the subject of science the content standard is specified: „edible, inedible and poisonous fungi, moulds, yeasts" (Innovated National Curriculum. Natural Science – Primary Education 2014, p. 4). In the performance standard, the following requirements are listed for learning about fungi:

At the end of the 3rd year of primary school, the pupil knows/is able to:

- that fungi are not plants;
- determine on five fungi whether they are edible, inedible or poisonous;
- that fungi also include moulds and yeasts (Innovated National Curriculum. Natural Science – Primary Education 2014, p. 4).

In the Innovated National Curriculum for 2nd grade of primary schools, the topic of fungi is taught in the subject of biology. In grade 5, in the subarea Communities of Organisms, the content standard introduces the concepts of fungi, the external structure of the body of fungi, edible fungi, and poisonous fungi. In this sub-field, pupils also learn about lichens, which are built by fungi in addition to algae (cyanobacteria). In grade 6, in the sub-field of Living Organisms and Their Structure, the content standard introduces the concepts of filament, mycelium, and sporangium. In the performance standard for this sub-field, the performance standard „compare the structure of fungi with and without fruiting bodies" is stated (Innovated National Curriculum. Biology – lower secondary education 2014, p. 6).

2. Curriculum about fungi in working textbooks, primary school textbooks

2.1. Working textbook Natural Science for grade 3

Processing of the teaching material about fungi was analysed in the working textbook Natural Science for grade 3 from AITEC publishing house, which is available online. The topic of fungi is treated on two pages as the last science topic in the working textbook for grade 3. In the textbook „Palubný denník", in which the basic teaching about fungi is embedded, information is written that fungi belong to living organisms; that mushrooms do not belong to plants; that mushrooms are divided into edible, inedible and poisonous; that edible mushrooms can be eaten; that inedible mushrooms are not dangerous for humans, but we don't eat them because they have an unpleasant flavour; that if a person eats a poisonous mushroom, it can cause health problems or even death; that fungi include both yeasts and moulds; that some yeasts and moulds are dangerous to human health; that there are yeasts and moulds that are beneficial to humans in the production of medicines, food, and beverages. Below the text are photographs of eight edible, non-edible and poisonous mushrooms, namely the summer cap, parasol mushroom, bay bolete, chanterelle mushroom, woolly milkcap, Satan's bolete, fly agaric and the death cap. Each mushroom has a symbol next to it that indicates whether the mushroom is edible, inedible, poisonous or violently poisonous. On the topic of yeast, the textbook shows photographs of yeast, sourdough bread and sauerkraut. Pupils learn that yeast is present in yeast and that we use it in food processing. The topic of mould is also treated in the form of photographs that depict useful and harmful moulds. A picture of mould on a wall, mould on a soft sausage, mould on a lemon is used to demonstrate harmful mould. A picture of a dry sausage with white mould and a picture of mouldy cheeses with both blue and white mould are used to demonstrate useful moulds. There is also a science experiment related to the topic of fungi, in which pupils will check the conditions for fungi reproduction. It's a simple experiment with two pieces of fresh bread. One piece

is placed in a plastic resealable bag and the other piece is placed loosely on the plate. Pupils have the opportunity to experiment to find out the conditions for mould reproduction, i.e. humidity and heat (Dobišová Adame, Kováčiková, 2023, pp. 55-56).

2.2 Textbook Biology for the grade 5 of primary school

We analysed a text about fungi in the textbook Biology for grade 5 of elementary school, which is available online. The topic Forest fungi and Lichens is treated in this textbook on three pages, the first two pages are devoted to fungi and the third to lichens. In the introduction of the text on the first page there is information about the structure of fungi – mycelium, fruiting body and its parts. Demonstrated are two pictures showing the horse mushroom and the death cap. Their parts are named next to the pictures and the text below the pictures gives the important information that the death cap has a volva at the base of the stipe, in which the young fruiting body of the death cap is encased. Further information is given that the fungi have tubes or lamellae under the cap on which the spores are formed by which the fungi reproduce. On the first page there are also pictures of eight edible mushrooms with their species names, and pictures of the summer cap, chanterelle mushroom, parasol mushroom, bay bolete, green-cracking russula, sticky bun, orange-oak bolete, rough-stemmed bolete. The first four edible mushrooms demonstrated in this textbook are also featured in the workbook for grade 3. An interesting fact is that the name of the summer cap is bracketed with the dialectal name – dubák. In the introduction of the second page, pictures of four inedible and poisonous mushrooms are demonstrated, namely the woolly milkcap, fly agaric, death cap and the livid entoloma. The woolly milkcap, fly agaric and the death cap are already demonstrated in the working textbook for the grade 3 of primary school. Further, the text explains symbiosis as a mutually beneficial coexistence of fungus and tree. It is demonstrated that the orange-oak bolete often grows under the common aspen (the text is accompanied by a photograph of an orange-oak bolete growing under an aspen tree). This page also includes information that fungi do not contain chlorophyll and therefore do not photosynthesise; that most fungi obtain organic matter from the dead bodies of organisms; and that there are parasitic fungi that live on the trunks of trees and derive nutrients from them. Demonstrated is a photograph of a woody plant with the shelf fungi as an example of a wood-destroying fungi. On the second page, the principles of mushroom picking and first aid for mushroom poisoning are also listed. The second page concludes with the importance of fungi in nature, namely the decomposition of dead organisms and food for forest animals. The teaching material on the third page is devoted to lichens, the introduction of the page provides information that lichens are made up of two organisms – a fungus and an algae, which live in symbiosis (Uherekova et al., 2019, pp. 31-33).

3. Initial testing of preschool and elementary education students' knowledge of fungi

Graduates of the bachelor's degree programme in pre-school and elementary pedagogy work as teachers in kindergartens and as educators in school children's clubs. After completing a follow-up master's degree programme, they are qualified teachers of primary education (grades 1 to 4 of primary school).

Students of the pre-school and elementary pedagogy study programme in the first semester of the Bachelor's degree take the course Natural Science Education. In the first week of the winter semester, students will take placement testing on selected natural

science topics. The initial testing is only informative for the teacher of this subject and the student, it has no influence on the continuous and final evaluation of the science education subject. In the 2023/2024 academic year, the initial testing consisted of two tests, one focused on fungi and the other on plants. In our article, we present the results of a content-focused test on fungi.

In the academic year 2023/2024, 56 full-time students of the 1st year of the Bachelor's degree programme in Early Childhood and Elementary Education participated in the testing. The respondents were graduates of various gymnasiums (a gymnasium is a four-year general education secondary school, the main aim of which is to prepare students for university studies) and secondary vocational schools of education from the Prešov Region. Students were tested in the 3rd week of September of the 2023/2024 academic year; the test was anonymous.

For testing, we used a test of our own construction, which contained 15 test items. In the test items we tested the basic knowledge about fungi. In constructing the test, we used 9 closed and 6 open test items. Of the closed test items, we used the polytomous and dichotomous forms, of the open ones the complementary and production forms.

Table 1
Forms of test items of the didactic test

Polytomous test item	Dichotomous test item	Productive test item	Complementary test item
1, 8, 15	2, 3, 4, 11, 12, 13, 14	6, 7, 9, 10	5

Source: own elaboration.

The test items were divided into four subtests. The first subtest contained test items focusing on the body structure of fungi – test items 2, 3, 4, 5, 6, 9, 15. Test items 7, 11, 12, 13, (subtest 2) focused on the importance of fungi in nature and for humans. Three test items (1, 8, 14) were from fungal physiology (subtest 3). One test item (10) tested knowledge of representatives of edible mushrooms (subtest 4).

3.1. Statistical results of testing

We present the success in solving the test items in 13 tables, which contain students' answers expressed in absolute values (first row) and in relative values (second row). We present the results of two open-ended test items (9, 10) verbally. In the first closed-ended test item, students were asked to determine whether fungi belong to autotrophic or heterotrophic organisms.

Table 2
Fungi belong to

autotrophic organisms	heterotrophic organisms
23	33
41.1%	58.9%

Source: own elaboration.

In the second closed-ended test problem, students were asked to determine whether the storage substance in fungi is cellulose.

Table 3
The storage substance of fungi is cellulose

yes	no
27	29
48.2%	51.8%

Source: own elaboration.

In the third closed-ended test item, students were asked to determine whether fungal cells are enclosed by a cell wall.

Table 4
Fungal cells are enclosed by a cell wall

yes	no
29	27
51.8%	48.2%

Source: own elaboration.

In the fourth closed-ended test item, students were asked to determine whether yeast is a unicellular fungus.

Table 5
Yeasts are unicellular fungi

yes	no
36	20
64.3%	35.7%

Source: own elaboration.

In the fifth open-ended test item, students were asked to complete the two basic parts of the fruiting body of the horse mushroom.

Table 6
The fruiting body of the horse mushroom consists of ..... and .....

cap	stipe
2	0
3.6%	0%

Source: own elaboration.

In the sixth open-ended test item, students were asked to write two characteristics of the violently poisonous death cap.

Table 7
Two characteristic features of the death cap

white lamellae	volva on the stipe
0	2
0%	3.6%

Source: own elaboration.

In the seventh open-ended test item, students had to explain the importance of saprophytic fungi in nature.

Table 8
Importance of saprophytic fungi in nature

decompose dead organisms
4
7.1%

Source: own elaboration.

In the eighth closed-ended test item, students were asked to select the correct answer (from three possible answers) to the question what is mycorrhiza.

Table 9
Mycorrhiza is

coexistence of fungi and plants
19
33.9%

Source: own elaboration.

In the ninth open-ended test item, students were asked to explain what is mycelium?

Seven student responses were close to the correct answer:

- „it's underground, the fruiting bodies grow out of it;
- forms already in the soil, mushrooms grow out of it;
- the underground part through which the fungus obtains nutrients;
- mushrooms grow from it;
- the necessary nutrients enter the mushroom through it;
- the bottom part of the mushroom that is in the soil;
- „roots" of mushrooms underground".

One student's answer was correct: „it's a cluster of fungal filaments (hyphae)".

In the tenth open-ended test item, students were asked to name three edible mushrooms. Students had to give the Slovak scientific name of the mushroom. Not one student correctly wrote the names of three different mushrooms. Students correctly spelled the genus and species name of the mushroom 43 times. The named mushrooms were the summer cap (19 times), chanterelle mushroom (11 times), horse mushroom (6 times), bay bolete (1 time), rough-stemmed bolete (2 times), parasol mushroom (3 times), woolly milkcap (1 time). Only the genus name of a particular mushroom was spelled correctly 53 times by students. The dialect name of the summer cap – dubák – was written by 24 students.

In the eleventh closed-ended test item, students were asked to determine whether mushrooms have a high energy value.

Table 10
Mushrooms have a high energy value

true	false
32	24
57.1%	42.9%

Source: own elaboration.

In the twelfth closed-ended test item, students were asked to determine whether fungi are used in the production of medicines.

Table 11
Fungi are used in the production of medicines

true	false
46	10
82.1%	17.9%

Source: own elaboration.

In the thirteenth closed-ended test item, students were asked to determine whether fungi can cause significant damage in agriculture.

Table 12
Fungi can cause significant damage in agriculture

true	false
36	20
64.3%	35.7%

Source: own elaboration.

In the fourteenth closed-ended test item, students were asked to determine whether fungi are involved in the construction of lichens.

Table 13
Fungi are involved in the construction of lichens

true	false
33	23
58.9%	41.7%

Source: own elaboration.

In the fifteenth open-ended test item, students had to choose an answer to the question What is a hypha?

Table 14
Hypha is

Fungal filaments
31
55.4 %

Source: own elaboration.

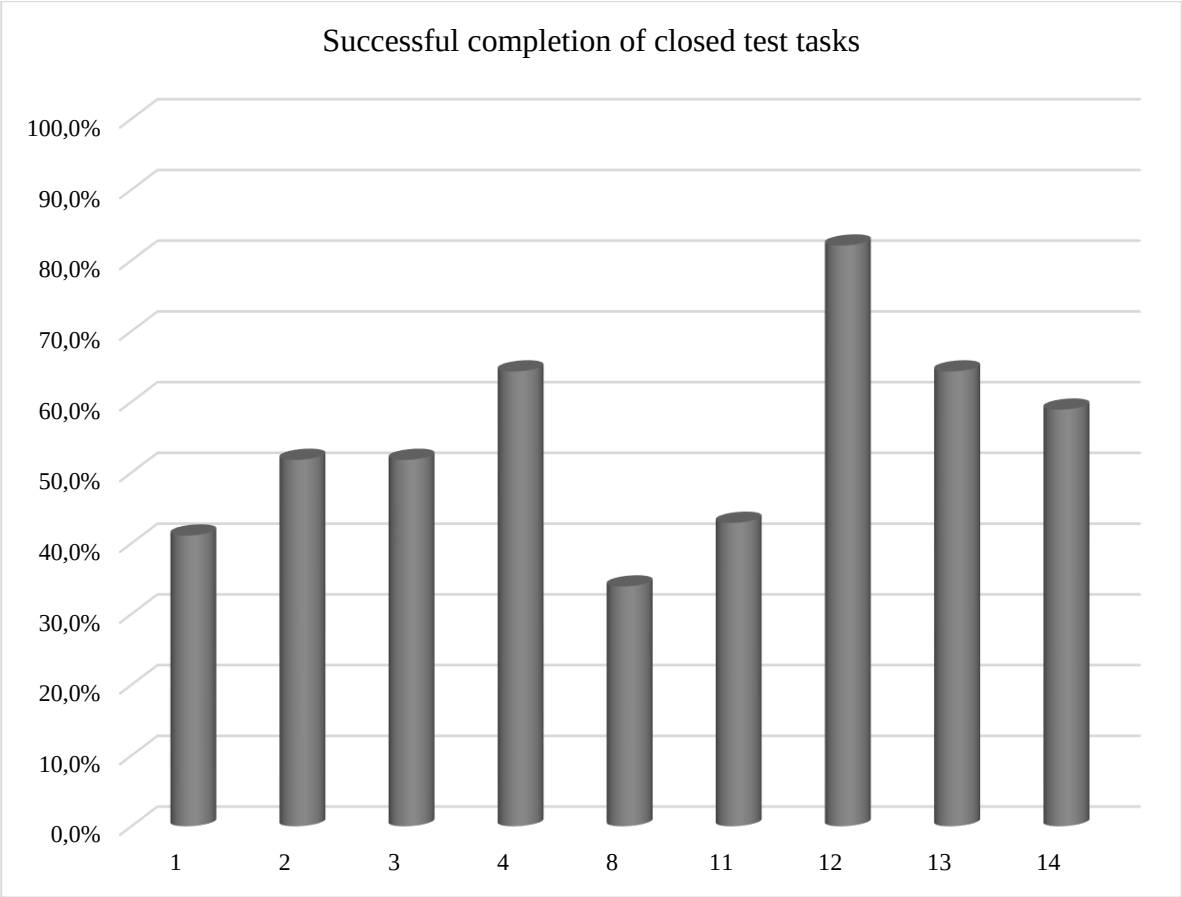

Diagram 1. Success rate in solving closed test items.
Source: own elaboration.

3.2. Interpretation of the results of the test items of Subtest 1 – Structure of Fungi

This subtest included seven tasks: 2, 3, 4, 5, 6, 9, 15. Test tasks with content focused on the structure of fungi formed the largest group. The lowest success rate was achieved by the fifth test item, in which students had to write the names of the two main parts of the fruiting body of the horse mushroom (biology curriculum for the grade 5 of primary school). Only two students spelled the term cap correctly, and no students spelled the term stipe. The sixth test problem, in which students had to write two characteristic features of the violently poisonous death cap (biology curriculum for the grade 5 of primary school), also had a very low success rate in solving. The distinctive features are the white lamellae and the volva at the base of the stipe. Only two students wrote the second feature, and none wrote the first feature. The death cap is the fungus that causes the most human poisonings in Central Europe. It is native in our territory, so future teachers should be able to describe its distinctive features. The most common answer given by students was the green colour of the cap, which is not an important identifying feature of the death cap. The highest success rate in solving a test item from this subtest was achieved by students in the fourth test item, in which we tested their knowledge of the structure of yeast. 64.3% of the students correctly indicated the answer that yeasts are unicellular organisms.

3.3. Interpretation of the results of subtest 2 – the importance of fungi in nature and for humans

We have included four test items in this subtest: 7, 11, 12, 13. The test items in subtest 2 were designed to test students' knowledge of the importance of fungi in nature and to humans. The lowest success rate was achieved by students in the seventh test item, in which they had to explain the importance of saprophytic fungi in nature (biology curriculum for the grade 5 of primary school). The task was successfully solved by four students who wrote that saprophytic fungi decompose dead organisms. This function of fungi can be considered as the most important in nature and students have no knowledge about it. The highest success rate in subtest 2 was achieved by students in test item 12, where 82.1% of students correctly stated that fungi are used in the production of medicines. The average success rate in the eleventh and thirteenth test items was 57.1% and 64.3%, respectively.

3.4. Interpretation of the results of the test problems of subtest 3 – Physiology of Fungi

We included the three test items 1, 8, 14 in subtest 3. The lowest success rate in subtest 3 was achieved by students in the eighth test item aimed at explaining the concept of mycorrhizae (biology curriculum for grade 5 of primary school). The task was solved correctly by 33.9% of the students who chose the answer coexistence of a fungus and a plant. A slightly higher success rate was achieved in the first test item, in which they had to choose the answer that fungi belong to heterotrophic organisms. 41.1% of students solved the problem correctly. The highest solution success rate, 58.9%, was achieved by students in the fourteenth item, in which they had to decide on the truth of the statement that fungi can cause significant damage in agriculture.

3.5. Interpretation of the results of subtest 4 – names of edible mushrooms

In subtest 4 we included a tenth test task in which students had to write three Slovak scientific names of edible mushrooms (science curriculum for grade 3 and biology curriculum for grade 5 of primary school). We must mention that not a single student spelled the three names correctly. The correct scientific genus and species name of an edible mushroom occurred 43 times in the tests. The most frequently named edible mushroom was the summer cap, which was written 19 times in the tests. Other mushrooms included the chanterelle mushroom (11 times), horse mushroom (6 times), and other edible mushrooms were named in no more than three tests. The correct generic name of the edible mushroom occurred 53 times in the tests (the most frequently mentioned were the chanterelle mushroom, summer cap, woolly milkcap, parasol mushroom, horse mushroom). Many students in this task gave the dialectal generic names of edible mushrooms. Most often (24 times), it was dubák – the dialectal name of the summer cap.

Conclusions

The results of the testing showed that students in the first year of Bachelor's studies do not have the elementary knowledge of fungi at the expected level in relation to their future teaching profession. The largest gaps in knowledge were demonstrated in open-ended test problems in which students had to formulate their own answer, e.g., as in test item five, six, and seven. The naming of the fruiting body part of the fungus, the distinctive

features of the death cap and the importance of saprophytic fungi are taught to pupils in the subject of biology in the grade 5 of primary school. Students performed better in the closed-ended test problems where they were allowed to choose one answer. In these test items, the success rates ranged from 33.9% to 82.1% (see diagram 1). We believe that during their higher education studies, students will equip and enhance the knowledge, skills and competencies required of an educator at the primary level who teaches the Human and Nature educational area.

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PART 2.

HOME VS. SCHOOL: UNPACKING STUDENT MOTIVATION AND ENGAGEMENT DURING COVID-19 PANDEMIC[1]

(*Ljiljana Plazinić*, *Nevena Buđevac*)[2]

Summary

The foci of this study are student motivation and students' views on instructional engagement during the COVID-19 pandemic. Our aim was to understand whether the differences in the ways teaching was organized during the pandemic (TV instruction vs. classroom instruction during shortened lessons) affected the way students felt about school and learning. We conducted the study on 540 students in total (270 per group) who evaluated their own motivation for learning and engagement related to selected subjects (The world around Us and Nature and Society for students from first to fourth grade and History, Geography and Biology for students from fifth to eight grade). Results revealed that attending shortened in-person classes during COVID-19 does not provide significant benefits in terms of students' perception of motivation during lessons and their experience of engagement in comparison to TV instruction. Among various differences between the two types of instruction, these results shed light on their similarities, especially from the perspective of the dominance of monological teaching, which seems to be prevalent in both.

Keywords: motivation for learning, students' views on instructional engagement, elementary and secondary students, classroom instruction, video based learning.

Introduction

In the wake of the unprecedented disruptions caused by the COVID-19 pandemic, understanding the intricate dynamics of student motivation and engagement has become of huge interest. Traditional learning and teaching structures underwent significant modifications as classrooms shifted from physical spaces to virtual platforms and students' homes. The question arises whether the instructional changes during the COVID-19 crisis have affected student experience of studying. To address this question, we compared motivation and students' views on instructional engagement, between students who attended instruction in school with lessons of shortened duration and those who participated in distance education following video lessons broadcasted on television or online platforms. In the next paragraphs, we will elucidate the concept of TV instruction as a prevalent form adopted during the initial wave of school closures amidst the COVID-19 pandemic. Then we will present the significant distinctions while also shedding light on often overlooked parallels between classroom and TV instruction. Subsequently, we will provide a succinct overview of existing research on this subject and identify the knowledge gaps that persist in this regard.

[1] A segment of the data presented in the article is derived from the doctoral thesis *Teaching Strategies as Factors of Academic Motivation, Self-Efficacy and Anxiety of Students in TV Instruction.* University of Belgrade, Faculty of Philosophy. This paper was supported by the Ministry of Science, Technological Development and Innovations, Decision number: 451-03-1/2023-01/4.

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1. Context of the study

The outbreak of the COVID-19 pandemic resulted in the pervasive emergence of distance education. Schools around the world were closed from March to June 2020 in an effort to mitigate the spread of the illness, and more than a billion students commenced their education from home. Given the varying access to digital technologies among schools, teachers, and students, most countries have employed TV instruction to broaden their reach to children (UNICEF, 2020). Following the declaration of a state of emergency by the Government of Republic of Serbia television broadcasts of video lessons were initiated the next day. The lessons, aligned to the national curriculum, were pre-recorded and accessible both online and through three national television channels based on a predetermined schedule (MoE, 2020a). Almost all school-age children (95% of primary and lower secondary school students) participated in this form of distance education during the second semester (March-June) of the 2019/20 school year (MoE, 2020b). Besides academic goals, TV instruction helped to replace the typical daily structure for students who were suddenly removed from their classrooms, addressing their need for security and predictability. Furthermore, this particular type of distance education was chosen as the most accessible, ensuring continuity of education for students with diverse socioeconomic statuses. Not only accessible, but TV instruction also allows control over its quality. In fact, every TV lesson underwent approval by educational advisors and the Institute for Education and Upbringing (Stojanović, 2020) and the Ministry of Education endorsed it as a "pedagogically sound practice" (Professional Instruction of MoE for 2021/22). In addition to televised lessons, students engaged with their teachers using online platforms and social media, and surveys indicate that the most utilized methods were chat applications like "Viber," emails, and phone conversations (Đorđić, 2021). In the subsequent school year of 2020/2021 in the Republic of Serbia, following the Guidelines for the Organization and Implementation of Educational Work in Elementary Schools for the 2020/21 school year (MoE, internal document, 2020b), education was conducted under two models. The first model entailed face-to-face interaction with students within school, with reduced class sizes. Classes were divided into two groups, alternately attending shortened classes in school (30 minutes instead of 45 minutes). Younger students (first four grades) attended classes daily, while older ones attended every other day or every other week. The shortened duration of classes had an impact on the way instruction is conducted, and students report that teachers attempted to cover the same material in a shorter time, using a frontal teaching approach, and they did not have the opportunity to explain new material to students multiple times and in different ways (Baucal et al., 2022). The broadcasting of TV lessons for all grades and subjects of elementary school continued throughout the school year. The Guidelines emphasized that these lessons „serve as examples of good practice" and that „students, when not engaged in direct educational activities at school, follow the lessons through the Public Media Service" (Ibidem, p. 12). The continued significance of TV instruction in this school year is evident from the fact that as of November 25th, students of the second cycle fully transitioned to distance learning until the end of the first semester. In the second semester, a rotation occurred between the first model of classroom teaching and the second model of remote learning (http://www.mpn.gov.rs/vesti/). The 2021/22 school year commenced with in-person instruction on school premises, except in cases of certain municipalities with high percentages of infected citizens. It is important to note that students in both instructional modalities

(TV/face-to-face) experienced alterations in the delivery of education due to the pandemic. Numerous studies indicate that their overall perception of education during the pandemic is negative, regardless of the instructional modality. Focus group discussions with over 400 elementary and high school students in Serbia have shown that students frequently recognized the adverse effects of the pandemic on their academic knowledge and competencies, as well as its impact on their study habits and motivation for school learning (Baucal et al., 2022). Similarly, from the perspective of teachers and parents, the educational process during the pandemic years could not fulfil the main goals of education (Buđevac, 2023).

1.1. Similarities and Differences Between Classroom and TV instruction

Televised instruction (telecourses, TV instruction) is a video-based teaching method, in which the learning of a specific subject is aligned with established curriculum and academic standards (Luskin, 1983). It is teacher directed; goal oriented with an academic focus, and requires deliberate implementation (McMullen, Madelaine, 2014). Generally speaking, TV instruction is based on direct instruction as a pedagogical paradigm. Ivić, Pešikan and Antić (2001) termed this approach as verbal-receptive, distinguishing it from inquiry-based teaching methods. Despite the fact that the negative effects of this approach are often emphasized in theoretical discussions, syntheses of empirical studies on instructional effectiveness consistently highlight the positive outcomes of direct instruction on student achievement (Scheerens, 2016, p. 205). Đorđić et al. (2021) surveyed 534 teachers in Vojvodina and discovered that 55.33% considered TV lessons to be of good quality, and less than 10% were dissatisfied. Additionally, the Institute for the Advancement of Education and Upbringing conducted a survey with 15,000 school employees, with 48.9% of respondents citing TV lessons as the most helpful tool during distance learning implementation. Plazinić (2021) analyzed 33 lessons of TV instruction during May 2020 using an observational system. The results revealed that the most common teaching strategy was clear explanation and systematic and structured teaching which were consistently present during lessons, with the least variability. On average, teachers were successful in explaining key concepts, and they frequently used various visible means to illustrate the content they presented (drawings, maps, photographs, simulations...). On the other side, teachers infrequently to intermittently used strategies of emotional support and cognitive activation.

Some disadvantages of TV instruction are visible at first glance. Video-based instruction has limitations including reduced interactivity and a lack of immediate feedback, as well as the challenge of personalization due to pre-recorded content. The lack of real-time interaction between students and teachers hinders opportunities for immediate clarification of doubts or questions and the immediate teachers' feedback and assessment that interactive classroom environments provide. While significant concerns arise due to the inherently asynchronous, indirect, and teacher-led nature of TV instruction it is important to note that direct instruction, characteristic of this form of education, is still the predominant teaching method in regular classroom instruction worldwide and especially in the Serbian educational system as evidenced by numerous studies. A secondary analysis of TIMSS study conducted on a teacher's representative sample of fourth-grade students highlights the huge prevalence of this pedagogical approach in mathematics and science. However, research-driven and experimental teaching techniques are notably underrepresented (Đerić et al., 2017, p. 164). The authors emphasize the similarity in

teaching practices between Serbian educators and those from neighbouring countries (Hungary and Croatia), as well as international benchmarks. Yet, Serbian students perceive instruction in math and science as more engaging compared to their regional and global peers. This approach is also prominent in the later years of elementary school (lower secondary education). In their observational study, Radulović and Mitrović (2014) analyzed 354 lessons conducted between 2012 and 2014. The findings reveal that direct instruction is the most commonly employed teaching method. Traditional lectures constitute over half of observed classes (50.6%), where teachers present content without any aids, and the second most frequent approach (9.0%) is modern lecture, similar to traditional methods but incorporating modern aids like PowerPoint presentations. The authors conclude that Serbian schools lack a diverse range of teaching methods, and do not align with modern teaching and learning concepts. Another study on instructional methods in our country, using teacher self-reports, found that most educators use verbal methods, nearly three-quarters exclusively monologic (Maksimović, Stančić, 2012). Milin (2016) used in-depth micro-ethnographic analysis of observed classes that utilized recording and transcribing of lessons taught by different subject teachers in seventh and eighth-grade classrooms, revealing limited dialogue and passive student position in classroom instruction. Even when dialogue occurred, it lacked diversity of perspectives and it was mostly controlled by the teacher. The dominance of monological teaching is not unique to Serbia; rather, it extends beyond its borders, as evidenced by findings from researchers abroad. An observational study of English language classes across 64 classrooms in primary and secondary schools from five countries (Applebee, Langer, Nystrand, Gamoran, 2003) unveiled that the average time allocated to dialogic discussions amounted to merely 1.7 minutes per 60-minute class session. Despite numerous shortcomings of TV instruction, it appears to have shared more similarities with regular classroom teaching than it might seem at first glance, especially when face-to-face classes were held for a shortened duration.

Considering these findings, it becomes pertinent to inquire into the potential impacts of this instructional modality on students' learning. Machtmes and Asher (2000) conducted a methodologically rigorous meta-analysis including only experimental and quasi-experimental studies and found no discernible difference in achievement between students engaged in telecourse and traditional instruction. Concerning non-cognitive educational outcomes of telecourse instruction, limited studies, primarily from earlier periods, have shown contradictory results. Their authors mainly concentrated on comparing attitudes towards the subject matter between participants in traditional and TV instruction. Moskowitz (1964) found that elementary school students showed less favourable attitudes toward learning foreign languages through television compared to traditional classrooms. Chute et al. (1988), in a five-year study on televised instruction, noted that while students expressed satisfaction, some resistance to this mode persisted. Conversely, Snowball and Collins (1980) reported no performance differences between accounting students in televised and traditional classes, but a slight increase in positive attitudes was evident among those exposed to televised lessons. In addition to conflicting findings, these studies also possess certain limitations in their applicability to the current moment of the COVID-19 pandemic outbreak. Prior studies occurred before the digital revolution and involved participants with distinct experiences from today's students. The broader framework of cited research had willing participants embracing televised learning,

unlike students who suddenly shifted to remote learning due to the pandemic. In 2020 TV instruction was used in response to a crisis, leading to societal and personal challenges. Studies addressing the experience of TV instruction since the COVID-19 pandemic have predominantly explored teachers' perspectives or have been based on a limited number of participants. Kuzmanović (2022) used semi-structured individual interviews in a study that investigated student perspectives during remote learning. She found that the sudden loss of immediate teacher support presented the greatest challenge to student motivation and self-regulation. Some students may feel less engaged and motivated in a distance environment due to reduced social pressure, while others may experience heightened motivation when having more autonomy and may perceive instruction as engaging considering that TV lessons have been specifically evaluated and assessed as high-quality by educational authorities. Focus group discussions involving over 400 elementary and high school students in Serbia reveal that students most commonly identified the negative impact of the pandemic on their academic knowledge and competencies, followed by its influence on study habits and motivation for school learning Baucal et al. (2022). Students reported that this approach did not provide as high-quality knowledge acquisition as in traditional classes, but often also mentioned the benefits of remote learning, such as increased flexibility in time management and the acquisition of new digital competencies. These findings raise concern because students' views on instructional engagement and motivation in schoolwork are vital for positive academic adaptation and various outcomes as it correlates with academic achievement, psychosocial adjustment, and future career success, with evidence of its responsiveness to interventions (Đerić et al., 2017; Hattie, 2009; Eccles, 2011; Plazinić, 2020).

Research aims

While some students may find it challenging to maintain motivation without the in-person interactions and accountability of the classroom, others can feel more engaged and motivated in TV instruction. Given the importance of the phenomena under examination, which stands in contrast to the limited research available on this subject, as well as the conflicting findings, it becomes imperative to explore if students' motivation and their views on instructional engagement levels vary between the two modes of instruction – face-to-face and televised – during the pandemic. This is especially important considering the extensive participation of millions of students worldwide in this form of education over a prolonged period and the potential applicability of certain video-based teaching methods beyond the context of a pandemic.

The purpose of the present study was to compare motivation and views on the instructional engagement of students in a sample of TV and face-to-face instruction during the COVID-19 pandemic. We establish the null hypothesis, suggesting that there are no differences in motivation and engagement between the two modes of instruction. We base this hypothesis upon previous contradictory results (Chute et al., 1988; Kuzmanović, 2022; Moskowitz, 1964; Snowball, Collins, 1980) as well series of similarities in teaching methods between those (Đerić et al., 2017; Maksimović, Stančić, 2012; Milin, 2016; Radulović, Mitrović, 2014; Applebee et al., 2003). This is especially relevant given that classes were shortened during the pandemic, which, according to students, compelled teachers to condense the curriculum and employ predominantly lecture-style teaching (Baucal et al., 2022).

2. Methods

2.1. Study design

The study employed a quasi-experimental design. Since it was not practically feasible to experimentally manipulate the mode of instruction (TV/face-to-face), we decided to compare data from students in the same grades and taking the same subjects in two different modes. Data regarding the experience of TV instruction were collected in May 2020 as part of a broader study within one of the authors' doctoral dissertations (Plazinić, 2021) from 1,908 students. Data on the experience of motivation and engagement in face-to-face instruction were gathered in October 2020, on days when students attended school during the COVID-19 pandemic, from 270 students who responded to an online questionnaire. We then randomly selected 270 participants from the TV instruction dataset who were in the same grade and subject as those who attended in-person classes.

2.2. Samples

At the questionnaire's outset, students were required to specify their grade and the subject they were studying that day, choosing between natural sciences and social sciences. The selected school subjects encompassed „The World around Us" (Serbian: Svet oko nas) and „Nature and Society" (Serbian: Priroda i društvo) for primary education (the first cycle of compulsory education in Serbia), as well as History, Biology, and Geography for lower secondary education (the second cycle of compulsory education). This selection was based on the assumption that teaching methods were relatively consistent within these subjects, in contrast to mathematics, language, and arts. The sample structure by grade, subject, and sex is presented in the Tables 1, 2, and 3 respectively.

Table 1
Sample structure according to class and type of instruction

		Class								Total
		1	2	3	4	5	6	7	8	
Type	TV	8	17	25	35	62	51	40	32	270
	Class-room	8	17	25	35	62	51	40	32	270
Total		16	34	50	70	124	102	80	64	540

Table 2
Sample structure according to subject and type of instruction

		Subject					Total
		WoU	NaS	Biology	Geography	History	
Type	TV	25	60	69	68	48	270
	Classroom	25	59	71	69	46	270
Total		50	119	140	137	94	540

Table 3
Sample structure according to students' sex and type of instruction

		Sex		Total
		M	F	
Type	TV	114	156	270
	Classroom	126	144	270
Total		240	300	540

2.3. Variables

2.3.1. Students' Views on Instructional Engagement

Commencing findings that various effective teaching practices together result in significant effects on students (Hattie, 2009; Scheerens, 2016), students' views on instructional engagement were gauged using a composite scale comprising ten statements. We adapted the Students Views on Engaging Teaching from TIMSS2015 (see Hooperet al., 2015) to make it suitable for TV instruction either (items implying interaction are excluded, e.g. *My teacher tells me how to do better when I make a mistake*). Measure is based on student responses to 10 statements (SLM scale), and each scale item was associated with five Likert response options (Completely disagree to Agree a lot). Half of the statements are formulated negatively (*The teacher explains very well. It is really hard for me to understand this teacher*). The scores for the items formulated with a negative orientation were transformed into their inverse values, and the scale score was computed as the mean across all ten statements, demonstrating good reliability ($\alpha = .82$).

2.3.2. Situational measure of motivation

Student motivation to learn can be conceptualized either as a trait or as state orientation (Brophy, 1987). Trait motivation is a general, enduring predisposition toward learning, the readiness of an individual to learn and enhance their knowledge and skills, based on a network of values, interests, needs, habits, beliefs, and experiences established in the process of socialization and through learning experiences (Trebješanin, 2012). State motivation is an attitude toward a specific class and it is more susceptible to changes. As a situational state, it refers to a student's readiness to engage in learning activities in specific situations (such as a class or lecture) where their particular interest, need, or the clear significance of the material or skill being learned actively motivates them (Ibidem). We used state motivation in this study because we were interested in the effect of the teaching modality applied during the current COVID-19 period, rather than a permanent disposition formed based on a series of broader factors. We employed The State Motivation Scale (Christophel, 1990) that asked students how they felt about taking a specific lesson. The scale consisted of twelve bipolar adjectives designed to measure students' motivational attitudes (Motivated 1 2 3 4 5 Unmotivated; Involved 1 2 3 4 5 Uninvolved; Want to study 1 2 3 4 5 Do not want to study). The scale reliability was excellent ($\alpha = .91$).

3. Results

To assess potential differences in students' views on instructional engagement and motivation between two distinct instructional modalities during the COVID-19 pandemic, we conducted an independent t-test. The Levene's test confirmed the homogeneity of variance. The average values and standard deviations of motivation and engagement, as well as the results of the aforementioned tests, are presented in the Table 4.

Table 4
The mean and standard deviations of student motivation and engagement in the two instructional modalities, a test for the homogeneity of variances, t-statistics, and group effect size

	Teaching modality	M	SD	Test of Homogeneity of Variances (df1 = 1; df2 = 538)		T	p
				Levene's Statistic	Sig.		
Engagement	TV	3,98	,759	,058	,810	-,019	.985
	Classroom	3,98	,772				
Motivation	TV	3,82	,929	,337	,562	-1,191	.234
	Classroom	3,92	,967				

Based on the arithmetic mean values and the theoretical range of the scale, we can conclude that, on average, students are motivated, and they perceive the instruction as relatively highly engaging. Participants reported exact same level of engagement (M = 3.98) on average, while motivation is somewhat greater in classroom setting (M = 3.92, SD = .967) than in video-based TV instruction (M = 3.85, SD = .929), but this difference was not statistically significant $t(538) = -1.191$, $p = .234$. Results showed that attending shortened in-person classes during COVID-19 does not provide significant benefits in terms of students' perception of motivation during lessons and their experience of engagement in comparison to TV instruction.

Discussion of results and conclusions

As motivation to learn is in the core of efficient teaching and learning, the exploration of students' motivation and engagement has significantly enriched our comprehension of effective pedagogical strategies. More specifically, psychological theories centred on motivation, including self-determination theory (Ryan, Deci, 2000), expectancy-value theory (Eccles et al., 1993), and goal theory (Covington, 2000), have been harnessed to frame the instructional methodologies through which educators can successfully engage their students. Despite the significant differences between face-to-face instruction and the one mediated by TV which we outlined in the introduction part, our research has indicated that motivation and the perception of instruction as engaging do not differ between the two mentioned instructional modalities in the situation of the COVID-19 pandemic. This finding may suggest that the teaching methods used in the two situations may be more similar than assumed, at least when it comes to students' motivation and engagement. According to students, teachers made efforts to condense the curricula, employed predominantly lecture-style teaching, and were unable to provide multiple explanations of new material. In addition, we could assume, and our results are in accordance with that assumption, that it is questionable how much teachers managed to enrol in different practices focused on individualisation of teaching, emotional and other ways of supporting students, especially having in mind that classes were shortened to 30 minutes and that the curriculum was not adequately shortened. Like in regular conditions, instruction in the classroom is dominantly frontal (Đerić et al., 2017; Maksimović, Stančić, 2012; Milin, 2016; Radulović, Mitrović, 2014) and does not rely enough on interaction (Applebee

et al., 2003), so we can assume that in case of shortened classes, it can not be much different and allow for students voice to be heard. The results of our research indicate that students who traditionally perceive their education as engaging, even when it predominantly relies on traditional lecture-based methods, tend to rate education delivered under pandemic conditions relatively high. They do not distinguish between whether it takes place in the classroom or through pre-recorded lessons via television. Although this finding is surprising, given the essential limitations of TV instruction, which is inherently impersonal, one-way, and lacks interaction possibilities, the similarities in the experience of these two seemingly different teaching modalities suggest that classroom teaching during the pandemic did not utilize the potential for interaction and remained lecture-based. These findings provide a basis for recommendations in future similar situations. Educational authorities could consider lightening the curriculum load for certain subjects, allowing teachers not to feel pressured to „cover" all areas and topics in shortened class sessions, while providing motivational and emotional support to their students, especially when education is conducted during challenging times of crisis. This can also explain the inconsistent or even ambiguous results of previous studies (Chute et al., 1988; Kuzmanović, 2022; Moskowitz, 1964; Snowball, Collins, 1980), as one has to have in mind the differences between practices in various educational systems and keep them in mind when trying to understand the findings. It is not only that practices differ among educational systems, but also students' understanding of learning, their learning goals, strategies, and how they feel in school and about school. Thus, unpacking students' motivation and engagement during the pandemic reveals that it did not significantly change in the situation when everything else in our lives seemed to be changed.

Finally, this study has certain limitations. Unfortunately, it was not possible to have the same sample of students evaluating both – TV instruction and classroom face-to-face teaching, as the two models of teaching were only alternatively applied during the intensive COVID-19 pandemic for the youngest students. It also led to another methodological weakness – two samples of data were collected in two moments of time using convenient samples, so it is questionable if it is representative of the whole student population. Still, we believe that it is precious that we have data about the students' perception of schooling in the moment of "natural experiment" that influenced education and our lives in a way we could not imagine.

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PROBLEM-BASED TEACHING IN THE FUNCTION OF MORE COMPLETE EDUCATION

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Summary

The theoretical foundations (elements and transitions) of problem-based teaching were the subject of research in the works of representatives of various theories – Piaget (theory of logical structures, theory of cognitive and constructivist development), Vygotsky (theory of cultural development of the child), Gagne (theory of cumulative development), Galjperin (theory of staged formation of mental actions), Bruner (constructive theory of perception), Keller (gestalt theory of cognitive learning), Rubinstein (theory of thinking), Bronovski (theory of the origin of knowledge and imagination) and others, as well as analyses by domestic authors (Vilotijević, Teodosić, Ničković, Đorđević, Stojaković, Suzić, Mijanović, Milijević). The paper points out the meaning of key terms – problem, problem solving, problem-based teaching, but also aspects that make problem-based teaching a more complete teaching system. Within the framework of problem-based teaching, the focus of learning shifts from acquiring knowledge in a finished form to the process of acquiring knowledge. The goal of the paper is to point out the importance of problem-based teaching in the functional training of students in terms of a more comprehensive approach to individual learning, which also implies skill in the development and complementary application of convergent and divergent thinking. The mentioned approach most often involves consulting different sources of knowledge and at the same time applying personal experiences in order to discover cause-and-effect connections and relationships between the problems and concepts being studied. The basic conclusion reached on the basis of the results studied so far is that in addition to acquiring better quality knowledge, students also develop self-confidence and creativity through the application of problem-based teaching.

Keywords: problem teaching, functional education, divergent thinking, creative learning.

Introduction

The pursuit of a more complete educational approach implies the introduction of different models and types of education, i.e. approaches to learning and processing teaching materials, especially when it comes to modern approaches supported by new, advanced technologies. The speed of changes in the field of technical and technological development has led to a significant change in attitudes and ways of life in modern society. The flow of an increasing amount of information in an increasingly short time has significantly made the living environment more dynamic to the extent that it has exceeded most of the natural possibilities for an individual to break it down functionally, assimilate it educationally, or fully adapt to it in a creative sense. The selection of useful information, as well as the approach to processing and learning, have become one of the most important aspects of the successful relationship of man to knowledge and the needs of action in the natural and urban environment, especially when it comes to the

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increasingly comprehensive aspects of digital networking. The mentioned social reality requires the need for an increasing degree of multidisciplinarity, i.e. with the goals of integrating educational work and perfecting the synthesis of methodological and didactic-methodical practice that will enable students to be trained for functional action in the dynamic environment of an interactive digital community. For this reason, the process of transition from education for life to the concept of lifelong education is primarily reflected in the need to harmonize the process of adopting „ready-made knowledge" and permanent improvement in accordance with the dynamics of the development of modern society and the increasingly diverse application and permeation of new technologies. For this reason, the changes carried out in educational institutions, especially when it comes to the modernization of the process of planning, organization, and implementation of teaching, are increasingly based on the transition from the concept of mechanical memorization of teaching contents (and their reproduction) to the development of intellectual and functional abilities based on educational research within the implementation of problem-based and project-based teaching and the learning process. We find the first ideas about solving problems as an instrument for the development of thinking in the ancient period, especially in Socrates and Plato. By skillfully asking questions and conducting conversations (through direct suggestions that contain the „missing link"), they brought their interlocutors and listeners (students) into a situation where they could grasp the cognitive elements themselves, i.e. gain insight into the basics and relationships that related to the considered subject and problem of research (cognition), and then, in accordance with the given goal and purpose, correctly combining induction and deduction to arrive at a confirmatory solution. Contemporary research indicates that the period of younger school age is particularly important in terms of the development of the overall abilities of the future personality (Keller, 2007). Vilotijević (2000) points out that Dewey was the first to design and practically apply the project method, which he later transformed into the so-called problem-method. Significant guidelines regarding the development of problem-based teaching and other innovative models can be found in the discussions of Piaget (theory of logical structures, theory of cognitive and constructivist development), Vygotsky (theory of cultural development of the child), Gagne (theory of cumulative development), Galjperin (theory of the stage formation of mental actions), Bruner (constructive theory of perception), Keller (gestalt theory of cognitive learning), Rubinstein (theory of thinking), Bronovski (theory of the origin of knowledge and imagination) and others.

1. Comprehension and understanding of problem-based teaching

The study of problem-based teaching systems dates back to the second half of the twentieth century. In pedagogical literature and practice, the mentioned type of teaching appears under several names, among which the following stand out: problem solving, problem study, learning by discovery, learning by research, project-based learning, teaching by research, creative teaching, learning by discovery, problem-based teaching, etc. Although different in terms of definition, problem-based teaching brings with it two common factors: research activity and the search for new solutions. Due to the above-mentioned factors and properties, most researchers agree that problem-based teaching contributes to the development of divergent thinking among students.

The basic characteristics of problem-based teaching are reflected in a coherent form of learning and a system of thinking development in which the primary basis, in response to the given problem, is research work and creativity. At the basis of educational and research work, i.e. encouraging a creative response to a given problem, there is a methodologically defined system of problem situations that the student needs to solve through independent or team, mentor-directed activities, on understanding the relationship between the given and the given. Ničković defines problem solving in class as „a form of effective learning", encompassed by „the existence of difficulty, the novelty of the situation and the contradiction between the known and the unknown", and characterized by „a conscious, directed and creative, as independent as possible activity, by means of which the student strives to, above all, by seeing the relationship between the given and the given and by finding new ways of solving, adopt new knowledge and create new generalizations, applicable in new learning situations" (1971, p. 91).

Although more complex in terms of the preparation and implementation of teaching activities, which at the same time include both knowledge transfer and the development of students' thinking activities, problem-based teaching represents a more comprehensive and fruitful way of educational work. In contrast to learning based on the reproductive practice of teaching material, learning through problem-based teaching is based on the gradual shaping of students' mental abilities, meaning the development of their independent thinking and functionality of knowledge. In this regard, problem-based teaching implies that the teacher, who implements this type of educational practice, is qualified for the combined application of didactic-methodical apparatus and methodological procedures within the framework of educational-research activities through which students are guided through various stages in the direction of acquiring knowledge and functional application of previously acquired knowledge (in accordance with the aim and outcomes of the curriculum). Because, just as every subject of research is a given covered by the determination of special elements and parameters (methodical and cognitive), their internal or external relationships, such that every cognitive approach consists of stages necessary to their values and relationships in a systemic and procedural sense, methodologically and methodically explain, classify and generalize.

In modern didactics, Stojaković points out, „it is increasingly and persistently demanded that teaching has a research character", which is why „the key task of the school is for students to understand the teaching content so much that they can apply the knowledge independently in completely new circumstances", which „mostly develops their creative thinking, which is the main goal of problem-based teaching" (2005, p. 72). The basic function of problem solving in teaching is the acquisition of knowledge, the creation of new generalizations regarding its importance and application in new situations, and the development of individual (specific) student abilities (Suzić, 2000). Studying the content and essence of problem-based teaching and learning as an effective form of developing intellectual abilities in students, many scientists tried to answer one of the key questions: *What is problem-based learning and what is its essence?*

American psychologist R. Ganjea classifies learning through problem solving as the most complex type of teaching because within such teaching, problem tasks are solved with the prior engagement of complex processes of thinking and mutual combination and connection of a series of different rules. Teodosić, one of the first pedagogues who dealt with the essence of problem-based teaching in the Republic of Serbia, emphasizes

that the role of the teacher within this model of teaching is not to communicate the final conclusions of some science, but to show students the ways to arrive at those truths (Teodosić, 1970; Milijević, 2003, p. 372). On the other hand, Đorđević points out that solving problems is a creative activity, „which seeks to discover new solutions when meeting special requirements" (Đorđević, 1981, p. 185). At the same time, problem-based teaching is defined as „a type of teaching in which students, through independent research and problem solving, develop creative thinking" (Vilotijević, 2000, p. 140). Based on different definitions of problem-based teaching, Milijević presents its following essential characteristics: a) that it represents the fastest form of learning, thinking, and creativity, b) that it includes difficulties, unknown situations that need to be solved, c) that the student makes a choice and a sequence of thought operations, d) to require that the problem be solved by the directed and conscious activity of each student, i.e. by seeing the relationship between the given and the assigned, f) that while solving the problem the student goes through spiritual turmoil, in order to experience spiritual calm when he solves it, g) that while solving the problem the student acquires new knowledge, creates new generalizations and applies this knowledge in new situations, and h) that through problem-based teaching, students are trained for independent research work of a creative nature (2003, p. 373). On the other hand, Lerner points out that problem-based teaching „consists in the fact that students, in the process of solving a specially developed system of problems and problem tasks, master the habits of creative work, acquire knowledge and ways of working, they form a civically active, conscious personality, which has a creative attitude towards his work" (1981).

When it comes to the articulation of problem-based teaching lessons, Vilotijević generalizes four stages: the first – creating a problem situation, the second – solving the problem (viewing the elements, analysis and synthesis, setting hypotheses, discussing hypotheses, verifying the chosen hypothesis), the third – practicing and determining, and the fourth stage – homework (Vilotijević, Vilotijević, 2016, pp. 43-44).

With regard to the educational effects of problem-based teaching, Ničković points out the following: a) positive orientation towards the goal, i.e. problem solving, satisfaction, and relaxation due to an adequately found solution, b) collective spirit and desire for each member to achieve optimal success, c) willingness to cooperate with others, d) development of feeling and responsibility for a scientific approach to the problem, and e) responsibility and feeling of satisfaction according to creative and scientific research work. Also, Ničković states that solving problems in class is „a form of effective learning that is characterized by: a) the existence of difficulty, the novelty of the situation, the contradiction between the known and the unknown, b) a conscious, directed and creative and as independent activity by which the student strives to, first of all, by seeing the relationship between the given and the given and by finding new ways of solving, adopt new knowledge and create new generalizations, applicable in new learning situations" (1977, p. 91).

As pointed out by M. Vilotijević and N. Vilotijević, effective organization of problem-based teaching also achieves the following important aspects: a) adoption of the knowledge system and effective ways of mental and practical activity, b) development of students' thinking (independence and creative abilities), c) formation of habits of creative acquisition of knowledge, d) habituation to creative application of knowledge, e) mastering the experience of creative activity (mastery of scientific

research methods, solving practical problems, artistic expression of reality), and f) motivating students and developing social, moral and cognitive needs (Vilotijević, Vilotijević, 2016, p. 45).

The basic meaning of problem-based teaching is to enable students to independently solve various tasks with maximum involvement of intellectual operations. This way of solving problem-type tasks represents the most effective form of learning only under the condition that the tasks encourage students to work independently and inventively and develop intellectual abilities. At the same time, Mijanović states that the ultimate goal of problem-based teaching is to enable students to acquire knowledge through active thinking, with the pretension that this work is gradually transformed into permanent self-education, necessary for the successful coping of an individual in increasingly complex work and life conditions and situations (1994, p. 22).

Problem-based teaching is a type of teaching process that supports learning through discovery, insight, and solving problem-type tasks, and as such it represents a kind of synthesis of teaching and learning, discovery and reasoning. For this reason, as Spajić points out, the preparation of problem-based teaching should be extensive, detailed, and thorough (2005, p. 433; Janković, 2016, p. 366).

2. From knowledge to skill: development of functional knowledge and the role of the reader/teacher

According to Rubinstein, „in a modern school, students are overloaded with a huge amount of knowledge, which stifles creative thought instead of encouraging and stimulating it" (1981, p. 15). Namely, the problem of the development of opinion is reduced to the problem of knowledge acquisition, especially when it comes to those approaches that are provided to students based on the classic processing of material and knowledge transfer carried out by the teacher, and within which opinion is „a matter of the teacher only, not and students" (Ibidem, p. 12). Such a conception of knowledge transfer is necessarily focused on the results of reproductive learning, while work on improving the thinking process itself is „put on the back burner". In this way, Rubinstein believes, „its active, creative aspect" is denied, that is, the student's ability to „discover the new" (Ibidem, p. 13). The impossibility for the student to discover new relationships within the limited fund of knowledge, i.e. its transmission in an unchanged form (processed through an inflexible work plan and program), represents a special problem of the development of functional knowledge and the student's own thinking activity. The strict application of such a uniform educational approach, which carries the characteristics of mechanistic communication (transmission) of teaching material, that is, mechanistic learning, becomes particularly harmful when it is combined with the understanding according to which „the knowledge that the teacher provides to the student is mechanically projected into his consciousness" (Ibidem, pp. 13, 62).

It is similar to the attitude reflected in the fact that „adequate help" provided by the teacher to the students means „communicating ready-made answers" or indicating „ready-made solutions". Namely, often in pedagogical practice, the teacher is faced with the problem „that the student who solved the task or who somehow adopted the theorem, applied to the given conditions, is not able to 'transfer' that solution to other conditions", that is, he is not capable (or does not have the skills) to solve the same task as soon as it is presented to him in a changed form or conditions (Ibidem, p. 74). The mentioned

problem indicates the inadequate development of productive thinking or the lack of work on the development of functional knowledge, which, among other things, is contributed in a special way by the teacher's help based on the interruption of cognitive stages by presenting a „ready-made solution". The assistance conceived in this way reduces student activities only to learning by practicing and memorizing ready-made solutions. In such a case, as Teodosić points out in the commentary, „the student's own thought activity that participates in acquiring knowledge falls out of the field of vision" (Ibidem, p. 13). From a pedagogical point of view, Rubinstein claims, the discovery of the regularity of a child's psychological development is of primary importance. Namely, only if he knows the psychological laws of child development, and we will add, if he has perfected himself in terms of unifying methodological and didactic-methodical bases, „the teacher will be able not only to train, but also to form the opinion of [students]". Without the formation of the student's opinion, according to Rubinstein, there will be no acquisition of knowledge regarding which the student is trained, because knowledge cannot be acquired „without analysis, generalization of knowledge" (Ibidem, p. 63), i.e. without those foundations (and methods) which systematically include the methodology of scientific and research work and the methodology of teaching.

If we look at thinking as „mediated cognition" (Ibidem, p. 27), seen and understood as a „problem-solving-behaviour" that arises from a problem situation, and which is aimed at solving it (Ibidem, p. 26), in that case, the teacher, by communicating „ready--made answers", immediately threatens the development of active and functional thinking among students. Namely, according to Rubenstein, „thinking solves the task" thanks to the discovery of unknown properties and relationships of objects or phenomena that are part of the problematic situation, i.e. those bases that are not given in the conditions of the problem task. Rubinstein indicates that „opinion is, in its essence, knowledge that leads to the solution of the problem or task facing the person [student]" (Ibidem, p. 27). In this regard, any „shutdown" or „disruption of the system" by providing assistance consisting of communicating a „ready answer [solution]" it is the opposite of striving for the development of the student's thought operations in the process of active acquisition of knowledge and functional understanding of what the student has accepted as knowledge. Namely, during the „thought process, certain 'paths' are formed", i.e. „certain ways of achieving analysis, synthesis, etc." (Ibidem, p. 56), which the teacher should not interrupt by announcing a „ready-made solution". The actualization of appropriate knowledge and the encouragement of students to certain process activities in terms of mental processing of the acquired knowledge is encouraged by using the so-called „immediate suggestions", which contain the „missing link" (Ibidem, p. 91). With such an approach, the teacher imitates the further actualization of the process of cognition and improvement of students on the way from knowledge to skill, i.e., in this way, the teacher segmentally continues to actualize the elements of cognition and understanding of both the content and function of knowledge itself, as well as the process by which it is acquired and mastered applications. If we accept that the process of thinking is also „the movement of knowledge in it" (Ibidem, p. 39), then we will see that „the process of thinking and its results are mutually connected" (Ibidem, p. 38), that is, that any interruption or skipping of cognitive stages also means the interruption of the development of thinking in him. Namely, the acquisition of knowledge understood as a „product of thinking", or as what includes thinking, is not reduced only to „impressing knowledge or drumming", which,

as Rubinstein himself emphasizes, „the teacher should at least strive for" (Ibidem, p. 63). Problem-based teaching aims to direct the acquisition of knowledge first of all in the direction of its discovery, because every „discovery of knowledge that needs to be learned requires more thinking". Namely, thinking cannot be reduced to the functioning of ready--made knowledge, it should, on the contrary, be manifested „first of all as a productive process that is able to lead to new knowledge" (Ibidem, p. 64). This implies that the student at the same time has the opportunity to understand the composition of what he is learning about, as well as the process stages that guide him in the direction of acquiring knowledge.

The possibility of acquiring and using knowledge depends on how „internal conditions" are created for students to acquire and use it. In this regard, it is necessary to point out the mutual conditioning of two important parameters, ie. *as much as the conditions for stimulating the development of thought activities are created within the educational environment, so much more opportunities are given within the knowledge transfer for the development and expression of the internal conditions and needs of the students, but also the expression of their own personality*. In order to create a positive relationship between the mentioned conditions, it is of particular importance that the teacher is familiar with the laws that ensure the possibility of two comparative processes *– the acquisition of knowledge and the mental development of students*.

3. Development of divergent thinking: from the actualization of knowledge to the actualization of mental operations

At the base of every transfer of knowledge is its generalization, which is the „result of an analysis that reveals important connections" within the subject and study/ learning problem, and which refers not only to the content of the acquired knowledge, but also when it comes to raising awareness of the stages related to the peculiarities of the knowledge acquisition process itself.

As Bronowski points out, self-awareness also develops with the development of consciousness (Bronowski, 1981, p. 68), which is one of the fundamental determinants of educational work. Accordingly, Rubinstein indicates that analysis, as one of the methods, is not only required by „the task and the conditions in which it is initially solved", but also „those changed conditions to which that solution is transferred" (Rubinstein, 1981, p. 75) , which together represent the basis in the process of acquiring knowledge through a problem situation. Namely, the mutual connection of everything that exists, and with it the system and process of educational content and way of working, „forms the ontological basis of the problematic nature of knowledge" within which thinking arises (Ibidem, p. 27). The problematic character is an „integral part" and „an inseparable quality or characteristic of knowledge", which in terms of subjectivity does not only express the state of the individual who learns, but also stems from the „objective relationship of knowledge towards the being, its object". Also, the problematic character is dependent on the nature of the object, its various determinations, and „their general mutual connection" (Ibidem, p. 27). Namely, the transfer of knowledge „usually means the application of a method of activity in new conditions, when solving other similar tasks, a method that has been accumulated by an individual and consolidated in the form of a habit". However, as Rubinstein points out, the very approach to solving the task „which is established as a habit" would have to be discovered and sanctified

beforehand. Hence, the problem of 'transfer' on the level of thinking is transformed into „the problem of applying previously found solutions (knowledge) to new tasks" (Ibidem, p. 75). The development of students' thinking cannot be imagined without their training „for independent reasoning, for analysis, synthesis, comparison, generalization" of the teaching material, that is, those contents and activities that are necessary in the process of „recognizing and solving every problem" (Ibidem, p. 13). In its structure, thinking is manifested precisely through the mentioned thought procedures (Ibidem, p. 55), while the work on its functional development cannot be complete without their methodological awareness during the acquisition of knowledge. For this reason, problem questions play a special role within the problem situation, which, unlike suggestive ones, require additional thinking activity of the student directed towards the clarification of the learning result itself, as well as the stages and processes that led the student to a certain conclusion reached within the educational – research activities. Without working on the formation of the student's opinion, Rubinstein believes, „he will not even acquire the knowledge that he is trained with", considering that knowledge itself cannot be adopted without its analysis and generalization (Ibidem, p. 63). Similar to the thought process, the process of acquiring functional knowledge or productive and divergent thinking is broken down into „links, stages" (Ibidem, p. 56), while the process of acquiring knowledge „manifests itself in research through the mutual correlation of the products it gives on its various stages" (Ibidem, p. 39). Thus, when solving a task, the analysis „breaks down what is given and what is required", while „by analyzing the data related to what is required in the task, the conditions that make up what is known are extracted" (Ibidem, p. 56). According to Rubinstein, „thinking is a process precisely because it is a continuous interaction between the person [the student] and the object", while „each act of thought changes the mutual relationship between the subject and the object". Namely, „each act of thought causes a change in the problem situation, and each change in the problem situation causes a further movement of thought" (Ibidem, p. 39). Such an approach actualizes the productive capacities of acquired knowledge.

Also, Zelts makes a distinction between reproductive and productive thinking, which he believes consists „in completing the complex, in renewing, reviving its missing links". The development of productive thinking is important considering that it is characterized „as supplementing, bringing to life a schematically anticipated complex", crucial in terms of acquiring functional knowledge. At the same time, Selz believes that reproductive thought is that thought „which is realized through the actualization of knowledge that exists in the subject", while productive thought is realized „by actualizing mental operations that are characterized as a reproductive process" (Selz, 1922, p. 569; Rubenstein, 1981, p. 32), which is basically what every methodologically conceived activity within problem-based teaching aims for. At the same time, it is necessary to emphasize that the development of the thinking process in no case is reflected only in the application of knowledge, but also in the actualization of the cognition of the process and the stages that occurred during its adoption (Rubinstein, 1981, p. 62).

4. The problem situation: the path from a scientific concept to an experience of understanding

Problem-based teaching is based on the concepts of *problem* and *problem situation*. The mentioned two concepts are interconnected, and as a rule, the emergence of the first causes the emergence of the second. Rubinstein points out that a problem and a problematic situation arise „if there are unknown, unfilled places in them, which need to be filled, instead of which their meanings should be put" (Ibidem, p. 27). Also, he points out that the situation in which contradictions are revealed has a particularly „harsh problematic character", because „contradictory data in a problematic situation necessarily give rise to a process of thinking, aimed at 'removing' them" (Ibidem, p. 28). According to Gestalt psychologists, the entire thinking process consists precisely „in the transformations to which the problem situation is exposed" (Ibidem, p. 30). A well-conceived problem--based teaching in this regard should enable knowledge to be acquired through the experience of understanding, and understanding through the process of discovery. Accordingly, Rubinstein points out that the „specificity of man's abstract thinking" is expressed in the fact that „human thinking is the interaction of man not only with the directly sense-perceived reality, but also with words objectified by the system of knowledge which accumulates in the process of historical development", and which man adopts in the process of his individual development (Ibidem, p. 26). When it comes to the „conceptually objectified system of knowledge", or „scientific concepts", which Vygotsky talks about, among other things, it is necessary to point out that one of the goals of problem-based teaching is to direct students' attention in the direction of understanding scientific concepts (through which the superstructure and cognitive enrichment of the meaning of spontaneous concepts derived from everyday life is carried out). Namely, according to Rubinstein, the general that makes up the content of a scientific term is not reduced to „any property in which several individual objects or phenomena are acquired", but represents (denotes) the property that they have in common (Ibidem, p. 51). In order to achieve the superstructure of spontaneous concepts using the foundations that „scientific concepts" contain, it is necessary to develop thought processes in students that enable the establishment of a functional structure in the system of knowledge and different types of communication (primarily educational) – which cannot be achieved without a coordinated application of methodological and didactic-methodical apparatus in the process of transfer and acquisition of knowledge. In this regard, one of the basic tasks of problem-based teaching is its preparation according to the principle of development and change of inter-functional connections, given that „changing the functional structure of consciousness constitutes the main content of the entire process of psychological development" (Vygotsky, 1977, pp. 217, 218). According to Vygotsky, the weakness of everyday concepts manifests itself „in the inability to abstract, in the inability to manage them willingly" in situations where „their improper use is valid" (Ibidem, p. 185). On the other hand, the weakness of the scientific term is reflected in „verbalism", that is, „insufficient saturation with the concrete" (Ibidem, p. 185). The strong side of what the scientific term requires, Vygotsky points out, is „to willingly use the 'readiness to act'", thus emphasizing that certain changes in the student's consciousness occur „in the fourth grade, in which concretization replaces verbalism", that is, when concretization it begins to influence the correction of „the curve of the development of 'spontaneous' concepts" (Ibidem, p. 185).

5. Educational research: activities for the benefit of creative expression and functional synthesis of knowledge

In order to make a distinction between scientific and educational research, we will point out several analogical connections between the properties of science (which were discussed by Bronovski) and properties close to them within educational practice. Namely, science deals with the systematic discovery and study of the law-based foundations of reality and their mutual relations, while education reveals the elements of science and the mutual relations of the processes and results of scientific discoveries. Bronowski views science „as a process of taking sentences that explain how the world works and breaking them down into words [concepts]" (1981, p. 68). In science, Bronowski points out, the search is for a language that imitates or reflects the structure of reality (Ibidem, p. 40), while education tends to acquaint students with scientific insights (results) and the structure of scientific and technological thinking about nature and the world, that is, about elements of science and mutual systemic and cognitive connections of the results and processes of scientific discoveries. Regarding the development of scientific concepts, Vygotsky indicates that they are not acquired only by memorizing and simply reproducing knowledge, but by understanding and applying them in the process of recognizing, defining, and solving problems (1977, p. 197).

The active development of the conceptual apparatus affects the development of the language and with it also the students' thinking abilities and communication skills (exchange of opinions and experiences). In this regard, Bronowski indicates that the nature and power of human language form the basis of „the creative tool that brings order and structure to human experience" (1981, p. 8). Namely, „the question of the mutual relationship of knowledge, thinking and practical action" (Rubinstein, 1981, p. 65) represents one of the most significant aspirations of educational work within the system of problem-based teaching. In this regard, it is important to point out that just as the structure of reality is not self-evident to scientists (Bronowski, 1981, p. 40), the structure of scientific insights and concretization of abstract scientific concepts presented within the teaching content is not self-evident to students either. Both mentioned „non-obviousnesses" represent the basis or training ground for new cognitions and new approaches to the organization of knowledge and learning. In science, the mentioned non-obviousness is overcome by constant improvement of methodological and systemic approaches realization of scientific research related to increasingly comprehensive and specialized (disciplinary) approaches, and summarizing the discoveries that have been made, i.e. increasingly complex, multidisciplinary considerations of various relations of reality and acquired knowledge. On the other hand, in the education system, various „obviousnesses" imply work on the improvement of the didactic-methodical apparatus and the conception of educational research that enables students to discover non-transparent relationships within the fund of scientific knowledge (offered within the age-appropriate curriculum). Namely, Bronovski points out that science is „an attempt to present the known world as a closed system with perfect formalism", while scientific discovery is „a process of permanently breaking through the ends of the system, opening that system and then quickly closing it" (and after „special part of the work [research]") (Ibidem, p. 77). It is similar when it comes to the educational system based on the formalized basis of differentiated teaching content (separate teaching subjects and grouped teaching units/topics), as well as the process of educational work (defined by the plan and program). The aforementioned „unobviousness",

which Bronovski talks about, in an analogous sense is also reduced to one of the problems of improving educational practice, and as such represents a special educational potential in terms of conceiving new models of educational and research activities in teaching, especially when it comes to project or problem-based interdisciplinary teaching. In this respect, project-based and problem-based teaching should enable teachers to programmatically „open the system", while educational-research activities should direct students towards an integrative understanding of the system and the process of acquiring knowledge within the subject, or, in a more complex sense, cross-curricular teaching content and the expediency of active and creative engagement in the development of thinking and functional knowledge.

6. Problem task: from the development of imagination to the improvement of the process and structure of thought activity

Research experience and creative participation of students in the process of acquiring knowledge through a problem situation greatly encourages (requires) the development and application of imagination. According to Bronovski, „the act of imagination means opening" system so that it shows new connections", that is, each act of imagination represents „the discovery of a similarity between two things that were thought to have none" (Ibidem, p. 78). At this point, we need to refer to another position of Bronowski's that can be used for the purpose of distinction and correlation within scientific and educational processes. According to Bronovski, science is characterized by a „systemic effort to establish closed systems one after the other", that is, „every fundamental scientific discovery opens the system anew". Such an approach, according to Bronowski, leads to the position that „the symbolism of language is richer than it was assumed", and at the same time, that it reveals „new connections" (Ibidem, p. 77). It is identical with education, with the difference that every participation in solving a task through a problem situation (i.e. every educational discovery) for students „opens up" the possibility of developing and expressing their own thinking results and activities, which is a prerequisite that leads to experiences related to with awareness of the functional aspects of acquiring knowledge and its general and/or practical importance. The fact that „there is no permanence in scientific concepts, because they are only our interpretations of natural phenomena" (Ibidem, p. 69), points to an attitude according to which, even in education itself, there should be no insistence on immutable forms of teaching practice and unchangeable forms of presentation of scientific concepts and fact. The mentioned peculiarity of science should serve as an additional inspiration regarding the organization of special educational and educational-research activities, especially when it comes to programs of actualization of functional properties of knowledge through the assignment of different types of problem exercises or project tasks. In this sense, problem-based teaching should also serve as an activity within which students, in addition to actively engaging in educational and research work, would be able to value creativity, innovation, and preservation of natural, scientific, cultural, and technical-technological heritage. On the other hand, the success that students achieve through solving a problem situation, in addition to the development of a personal relationship towards the acquired knowledge and the new and useful insights and solutions achieved, should also serve as a guideline for their further intellectual development, that is, it forms an element of motivation to continue their further education and professional guidance.

If we start from the assumption that „knowledge about the object" is not given „outside the cognitive activity of the subject", but that it is, on the contrary, „constructed in the course of his thought activity" (Rubinstein, 1981, pp. 34-35), in that case the study of the thinking process and its development primarily implies the study and improvement of the „processual flow and structure of the thinking activity of a person [student] as its subject" (Ibidem, p. 39). According to Gestalt theory (Köhler), the thought process is a special case of a process that is „regulated by the internal mutual relations that arise within it" (Köhler, 1930, p. 148; Rubinstein, 1981, p. 30). Namely, according to Rubinstein, the process of thinking consists primarily of analyzing, synthesizing, abstracting and generalizing, while the regularities of their processes and mutual relationships represent „the basic internal laws of thinking" (Rubinstein, 1981, pp. 39-40).

7. Problem-based teaching: from understanding to new insights

One of the significant aspects of thinking, that needs to be given special attention within the framework of problem-based teaching, is the ability with which students perceive the elements and mutual relations in the subject system, the problem, the system, and the process of acquiring knowledge. According to Vygotsky, „the diversity of objects arises from the inability to adapt" which entails the act of „understanding". The famous Russian theoretician states that Kleppard derived from this fact a law that he called „the law of understanding", which boils down to the rule according to which „the more we use a relationship, the less we understand it". From this position of Kleppard's, a law is derived according to which the ability to understand is proportional to the inability to adapt. Also, in accordance with the above, Vygotsky presents another important position related to the ability to understand, within which it is claimed that „the more a relationship is used automatically, the harder it is to understand" (Vygotsky, 1977, p. 209). Explaining the difference between the concept of similarity and difference, Vygotsky indicates that the concept of similarity „requires the creation of an original generalization or concept that includes objects between which this relationship exists", while, on the contrary, the concept of difference „does not require that thought necessarily create a concept", stating that it „can arise in a completely different way" (Ibidem, p. 210). Work on the development of understanding is extremely important considering that understanding „is based on the generalization of one's own psychic processes, which conditions mastery over them" (Ibidem, p. 222). In this regard, it is important to state that within the framework of systemic learning (education) „understanding comes through the gate of scientific concepts" (Ibidem, p. 222). Vygotsky states that „the problem of non-spontaneous and especially scientific concepts" represents one of the basic problems of learning and development (Ibidem, p. 227). Namely, one of the crucial differences between spontaneous and non-spontaneous concepts, especially when it comes to scientific concepts, is that „they appear outside the system" (Ibidem, p. 223), that is, from „a different relationship to the experience of the child" (Ibidem, p. 199). According to Vygotsky, „a scientific concept, by its very nature, assumes a certain place of its own in the conceptual system", within which its relation to some other concept is determined (Ibidem, p. 225). Accordingly, a scientific concept can be „understood and willing" only within a certain system, and „understanding and systematicity", according to Vygotsky, are „complete synonyms when it comes to concepts", such as „spontaneity, misunderstanding and lack of systematicity of three different words to denote the same thing in the nature of children's concepts"

(Ibidem, p. 224). According to Vygotsky, „the dependence of scientific concepts on spontaneous ones and their reciprocal influence on spontaneous [concepts] arises as a result of the special relationship of the scientific concept to the object", i.e., due to the circumstance according to which the relationship of the scientific concept to the object is „mediated by another concept" – one that at the same time it includes both the relationship to the object and the relationship to another concept (Ibidem, p. 225). Unlike the spontaneous concept, „the scientific concept necessarily assumes a different relationship to the object, possible only in the concept". When it comes to a scientific concept and its „different relationship to the object", then the existence of a certain „conceptual system" or „interrelationship of concepts" is necessarily assumed (Ibidem, p. 225).

Not only in terms of scientific concepts, but also when it comes to learning, a special place is occupied by system and process, two inseparable aspects in terms of the way of viewing and understanding acquired knowledge, that is, the functionality of education and the application of knowledge.

When it comes to conceiving the plan and program for the implementation of problem-based teaching, special attention should also be paid to Koffka's point of view, which implies the dual nature of development, which directs the educational approach to the process of harmonizing the elements related to „development as maturation and development as learning" (Ibidem, p. 232). According to Vygotsky, development through maturation provides opportunities that systemic learning (as a form of „building on maturation") can and should fulfill and complete (Ibidem, p. 228). Namely, systemic learning affects the creation of new and/or improvement of old structures in the process of development through maturation (Ibidem, p. 233), which is why the conception of problem tasks should be viewed as an educational prism that encourages students to accept the process of education and upbringing as the basis of permeation two aspects of personal development – one related to the awareness of the functional bases of previously acquired knowledge, and the other, related to the experience of maturing the personality as a subject of knowledge (or a bearer of experience in terms of the self--knowledge mutual relationship). Systemic learning, Vygotsky points out, does not always have to follow development through maturation, nor does it always have to keep pace with it, but, to a certain extent (which does not degrade the process of maturation), it can precede development through maturation, „encouraging and challenging it the emergence of new forms in it" (Ibidem, p. 234). Namely, the problem situation in which more complex problem tasks are assigned is primarily reflected in encouraging students to actualize previously acquired knowledge, i.e. directing them in the direction of observing and creating new knowledge relationships, and with that, acquiring new insights (solutions), skills application of knowledge (functional experience) in relation to the assigned subject and problem, i.e. goal and outcomes of research and learning.

When it comes to the development of understanding, Vygotsky emphasizes that the „law of understanding" is based on the principle of functionality, and as such it clearly indicates when the student needs understanding and when it does not. As an accompanying problem related to the very act of understanding, Vygotsky states the „problem of structure", which he indicates primarily refers to the uncertainty regarding „with what means understanding is achieved and what obstacles it encounters" (Ibidem, p. 209). In response to the aforementioned doubt, Vygotsky introduces the „law of displacement or relocation". Namely, Vygotsky points out that „to understand an action

means to translate it from the level of action to the level of language", that is, „to reproduce it in the imagination so that we can express it in words". Moving an action from the level of action to the level of thinking is directly related to „the repetition [actualization] of those difficulties and those problems that followed the adoption of that action at the level of action" (Ibidem, p. 209). The mentioned problem in a special way indicates the importance of the development of imagination and creative thinking in students, who, at the same time, direct educational work in the direction of three-valent development – perception, understanding, and attention. Comprehension, understood as „an act of consciousness centered on the very activity of consciousness" (Ibidem, p. 221), and attention, according to Vygotsky, represent the basic factors of mastering „the process of one's own thinking" (Ibidem, p. 216). The very process of memory, according to Vygotsky, „necessarily presupposes the activity of attention, perception and understanding", while „perception necessarily includes the same function of attention, recognition, or memory, and understanding" (Ibidem, p. 217).

Conclusions

Taking into account the aforementioned aspects and needs of the development of thinking, which are only part of the factors and significant facts regarding the establishment of a more complete education, it is inevitable to state the issue of further direction and the need for a more purposeful shaping and realization of the concept of problem-based teaching, especially when it comes to the research activities of students and their understanding of the role and significance of the functionality of the acquired knowledge. In this respect, overcoming the limitations of the „mechanistic" approach in the process of presenting, transmitting, and acquiring knowledge is one of the most important aspects when it comes to the correct positioning of problem-based teaching and the standardization of research activities that guide students towards the harmonious development of personality and the integrative foundations of creative thinking, but and understanding the role of man, scientific knowledge and technological achievements in the life of the individual and the community. In this regard, the main task of the problem approach is related to the harmonization of students' activities and their educational upgrading (within different cognitive stages) from the process of „learning by rote" to „learning through discovery". Solving problem tasks through understanding the functionality of the acquired knowledge, as well as the learning process itself through a creative approach, supported by the harmonious harmonization of the methodological--methodical practice system, will certainly enable and encourage the development of a more comprehensive education.

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THE ASPECTS OF NATURAL NUMBERS IN EARLY SCHOOL EDUCATION

(*Jacek Szybowski*[1])

Summary

The aim of this paper is to present the issue of various aspects of natural numbers in the early school education of children. Firstly, the formal definition and basic properties of natural numbers shall be presented. Subsequently we shall present the content related to learning about numbers contained in the core curriculum of Polish early school education. Finally, the following aspects of numbers shall be presented in the context of teaching children aged 7-10: set, ordinal, measurement, algebraic and coding.

Keywords: natural numbers, aspects of numbers, order, early school education.

Introduction

Numbers have always accompanied man and have been the subject of his research. Pythagoras reportedly stated that „a number is the essence of all things". Even the ancient astronomers calculated the duration of a complete cycle of moon phases and even predicted the time of a solar eclipse. The Chinese used the number theory laws to calculate army numbers, and the Greeks used the golden ratio in architecture and art (Ciesielski, Pogoda, 2013).

However, natural numbers have always played a special role. The German mathematician L. Kronecker, who lived in the 19th century, stated that „Good God created the natural numbers, others are the work of man".

A child encounters natural numbers from the beginning of his life. Mom encourages a child to eat five more spoons of soup, dad gives a child the score of the match, a child sees changing numbers on the electronic clock, the bus number on the bus display, prices in the store, and an increasing number of candles on the birthday cake.

The task of preschool and early school education is to use child's experience and organize its knowledge regarding numbers, and in particular to draw attention to its various aspects.

In the professional subject literature many items concerning teaching numbers at the stage of early school education can be found (Wright, Stanger, Stafford, Martland, 2006; Wroght, Ellemor-Collins, Tabor, 2011; Richardson, Dolphin, 2020; Richardson, 2012). In our paper, we shall focus on aspects of a number in primary education.

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1. Definition and properties of natural numbers

We denote natural numbers with the symbol $\mathbb{N}$. We can define them in many ways. People have been using natural numbers for millennia, and the pioneers of studying natural numbers were famous Greek scholars: Pythagoras, Euclid and Archimedes (Pickover, 2009). However, it was only at the turn of the 20th century that G. Frege and B. Russell independently proposed the definition of natural numbers as powers of finite sets. This approach is the most intuitive and is therefore naturally used in early school education.

J. von Neumann – a Hungarian-American scientist of Jewish descent – presented the formal construction of the set of natural numbers (Holmes, 1998). The Italian mathematician G. Peano, in turn, developed the axiomatics of natural number arithmetic (Kaye, 1991).

According to Pean, every natural numbers construction should satisfy the following axioms:

- $0 \in \mathbb{N}$;
- $\forall n \in \mathbb{N}\ \exists s(n)$successor of a number n;
- $\forall n \in \mathbb{N}\ s(n) \neq 0$;
- $\forall m, n \in \mathbb{N}\ m \neq n \Rightarrow s(m) \neq s(n)$;
- $[\forall A\ (0 \in A \wedge\ \forall n \in \mathbb{N}\ n \in A \Rightarrow s(n) \in A)] \Rightarrow A = \mathbb{N}$ (principle of mathematical induction).

Generally, these axioms have been accepted, although the first axiom is a matter of convention. Some scholars accept 0 as a natural number whereas others do not and present 1 as the smallest natural number.

In von Neumann's model, the role of zero is played by the empty set, while the successor of the n number is defined as

$$s(n) := n \cup \{n\}.$$

Therefore, consecutive natural numbers are sets:

$$0 = \emptyset;$$
$$1 = \{\emptyset\};$$
$$2 = \{\emptyset, \{\emptyset\}\};$$
$$3 = \{\emptyset, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}\};$$
$$\ldots$$

The most important properties of natural numbers, apart from the principle of mathematical induction, include:

- The minimum principle: every nonempty subset of the set of natural numbers has a smallest element.
- The maximum principle: every nonempty, top-bounded subset of the set of natural numbers has a greatest element.
- The $\leq$ relation is a linear order (definition in Chapter IV).
- Space $(\mathbb{N}, \leq)$ is not densely ordered, i.e. there are no natural numbers between any natural number and its successor.

On the set of natural numbers, we can perform addition (+) and multiplication ($\cdot$), which are internal operations. The set of natural numbers with these operations forms the algebraic structure of a commutative half ring. This means that for any natural numbers a, b, c the following conditions are met:

- $(a + b) + c = a + (b + c)$;
- $a + 0 = a = 0 + a$;
- $a + b = b + a$;
- $(a \cdot b) \cdot c = a \cdot (b \cdot c)$;
- $a \cdot 1 = a = 1 \cdot$ a;
- $a \cdot (b + c) = a \cdot b + a \cdot c$;
- $a \cdot 0 = 0 = 0 \cdot$ a;
- $a \cdot b = b \cdot$ a.

Let us quote the first five meanings of the word „number" from the online Longman Dictionary of Contemporary English: (https://www.ldoceonline.com/dictionary/):

1. a word or sign that represents an exact amount or quantity;
2. a phone number;
3. a number used to show the position of something in an ordered set or list;
4. a set of numbers used to name or recognize someone or something;
5. an amount of something that can be counted.

The first and fifth meanings correspond to the plural and measurement aspect of the number, the second and fourth – to the coding aspect, and the third – to the ordinal aspect. We shall discuss these aspects in the fourth chapter.

2. Natural numbers and the core curriculum for preschool and early school education in Poland

Content related to learning numbers is included in the Regulation of the Ministry of National Education on the core curriculum for preschool education and the core curriculum for general education for primary schools of February 24, 2017 (MEN, 2017).

Child's achievements at the end of preschool education.

Cognitive area of child development. A child prepared to start school education:
12) classifies objects according to: size, shape, color, purpose, arranges objects into groups, rows, rhythms, recreates arrangements of objects and creates its own arrangements, giving them meaning, distinguishes basic geometric figures (circle, square, triangle, rectangle);
13) experiments, estimates, predicts, measures the length of objects, e.g. using a hand, foot, shoe;
15) counts elements of sets while playing, cleaning, exercising and performing other activities, uses cardinal numbers and ordinal numbers, recognizes digits from 0 to 10, experiments with creating subsequent numbers, performs addition and subtraction in a practical situation, counts objects, distinguishes incorrect counting from correct counting;
16) uses concepts related to the sequence of time in play and during other activities, e.g. yesterday, today, tomorrow, morning, evening, including the names of seasons, days of the week and months;
17) recognizes models of coins and banknotes of low denominations, organizes them, understands what money is used for in the household;

Education contents – specific requirements.
Mathematics education.

- *Achievements in understanding numbers and their properties. A pupil:*

1) counts (forwards and backwards) from the given number by 1, by 2, by 10, etc.;
2) reads and writes numbers from zero to one thousand and selected numbers up to one million (e.g. 1,500, 10,000, 800,000) using digits;
3) explains the meaning of digits in writing a number; indicates ones, tens, hundreds, etc., determines the order using an ordinal number;
4) compares numbers; arranges numbers from smallest to largest and vice versa; understands phrases such as: a number that is 7 greater, a number that is 10 smaller; uses the signs: <, =, >.

- *Achievements in using numbers. A pupil:*

1) explains the essence of mathematical operations – addition, subtraction, multiplication, division and the relationships between them; uses intuitively the properties of actions;
2) adds to the given number in memory and subtracts from the given number in memory: a single-digit number, the number 10, the number 100 and multiples of 10 and 100 (in simpler examples);
3) *multiplies and divides in memory to the extent presented in the multiplication table; multiplies numbers smaller than 20 by 10 in memory; solves equations with unknowns written in the form of a gap (fills in the gap); uses own strategies when performing calculations; uses the equal sign and the signs of the four basic operations;*
4) adds and subtracts two-digit numbers, writing sown partial results if necessary, or, performing operations in memory, immediately gives the result; calculates sums and differences of larger numbers in simple examples such as: 250 + 50, 180 – 30; multiplies two-digit numbers by 2, writing down, if necessary, partial results of actions; uses its own strategies when performing calculations.

- *Achievements in the application of mathematics in real life situations and in other areas of education. A pupil:*

1) classifies objects and various elements of the socio-natural environment consistently with their distinguished features; notices rhythm in the natural environment, applied art and other human products present in child's environment;
2) divides into two and four equal parts, e.g. a sheet of paper, a chocolate bar; uses the terms: half, two and a half, four equal parts, fourth part or quarter;
3) performs monetary calculations; converts zlotys into groszes and vice versa, distinguishes the denominations of coins and banknotes, indicates the differences in their purchasing power;
4) reads the hours on a clock with hands and an electronic clock (displaying digits in the 24-hour system); performs simple time calculations; uses time units: day, hour, minute, second; uses a stopwatch, phone, tablet and computer applications; writes down dates, e.g. of birth or the current date; uses a calendar; reads and writes Roman numerals at least up to XII;
5) measures temperature with a thermometer and reads it;
6) makes estimation calculations in various life situations;

7) weighs objects; uses the terms: kilogram, decagram, gram, tonnne; knows the relationships between these units; measures fluids; uses the terms: liter, half a liter, quarter of a liter;
8) uses checkers, chess and other board or logical games to develop strategic and logical thinking skills, understanding the rules, etc.; transforms games by creating its own strategies and organizational principles;
9) uses acquired skills to solve problems, engage in creative activities and explore the world, taking care of own development and creating individual learning strategies.

3. Numbers in early school mathematics education

Children beginning school education have already been introduced to the concept of numbers. They know the numbers from at least 0 to 10. Children also know order of numbers, which allows them to count the elements of small sets and add and subtract up to 10.

According to Piaget, children's development is divided into four phases (Wadsworth, 1998; Piaget, 1936):

- sensory and motor (0-2 years);
- preoperative (2-6 years);
- specific operations (6-12 years);
- formal operations (over 12 years).

Children who have not yet reached the operational level of thinking, even at the level of concrete operations, cannot understand that the result of counting does not depend on the location of the objects which are being counted. They think that if objects are scattered in space, there are more of them than when they are close to each other. This also translates into a misunderstanding of the constancy of qualities such as length, volume or mass. The length of the string does not depend on whether it is wound on a spool or straightened. Similarly, a kilogram of sugar will have the same volume and weight, regardless of the shape of the container in which it is being stored.

Therefore, one of the basic tasks of an early school education teacher is to recognize the level of thinking of children beginning school education (in Poland, these are usually 7-year-old children) and to skillfully support the development of their operational thinking.

We consider natural numbers in three basic aspects: plurality, ordinal and measurement (Nowik, 2013; Semadeni, Gruszczuk-Kolczyńska, Treliński, Bugajska-Jaszczołt, Czajkowska, 2015).

Some authors also distinguish the monetary aspect, although due to the fact that monetary amounts are expressed using binomial expressions and are used to measure financial value, they should rather be classified as the measurement aspect.

In addition, we can also speak of the algebraic and coding aspects. We will now take a closer look at each of aspects.

Plurality aspect

The number in this aspect reflects the count of a given set. In formal terms, we can treat every natural number not greater than a fixed number N as an abstraction class of the equinumerity relation *R* on the set

$$M_N=\{A: A \text{ is a set with at most } N \text{ elements}\},$$

where if *A*, *B* belong to M_N, then *A R B* if *A* and *B* are equal. Since *R* is an equivalence relation, the above definition is correct. Of course, we do not provide this definition to children, but already in kindergarten we develop children's intuition by conducting simple exercises in which children check whether two sets have the same number of elements.

Sets are equal in count if there is a bijection between them. In the case of finite sets, this simply means that it is possible to combine elements of both sets in pairs – one element from each set. If this is not possible, then there are more elements in one of the sets than in the other.

Such exercises reinforce children's knowledge that the size of a given set does not depend on the location of its elements, the order in which they are counted, their type (size, color, weight, etc.). There is a specific number associated with this count. In order to find it a child in kindergarten counts the elements of the set: 1, 2, 3,… The last number said by the child is equal to the number of elements in the set.

Another benefit of practicing such exercises is acquiring the ability to compare the number of elements of different sets, as a first step to learning about the minority (<), equality (=) and majority (>) relationships between numbers.

We can use blocks – preferably of different colors or shapes (e.g. Dienes blocks), fruit, balls or other everyday objects as elements of sets that children will compare. It is also a good idea to divide pupils into two or more groups and compare sizes of the groups. Children, becoming elements of these sets, treat such an exercise more as a physical game, which makes them more involved in counting.

The plurality aspect is closely related to learning basic arithmetic operations, i.e. addition, subtraction, multiplication and division. At first, children must realize that adding elements to a set increases its size, and subtracting elements reduces it. Once children are familiar with numbers and their natural order, you can ask what the size of a set will be when we add (or subtract) a certain number of elements to it. Examples of text problems of this type:

Example 1. There are 4 houses on one side of the street and 3 on the other. How many houses are there on the street?

Example 2. Wojtek bought 18 candies. He ate 5 of them on the way home. How much candy does he have left?

Initially, to solve these tasks, children need props – real houses or candies, or their substitutes. Initially children arrive at the result by counting the elements of the final set, then by adding or subtracting from the initial number (e.g. 4, 5, 6, 7 or 18, 17, 16, 15, 14, 13). As children improve their thinking and arithmetic skills, objects can be replaced by drawings, and later still the child performs mental calculations.

Ordinal aspect

Unlike numbers in the plurality aspect, which give us information about how many elements there are in a given set, numbers in the ordinal aspect describe which spot an element occupies in the set. Therefore, we describe them with ordinal numbers.

Let us recall that partial order in a set X is a relation R that satisfies the following conditions:

- reflexivity ($\forall x \in X\ xRx$)
- anty-symmetry ($\forall x, y \in X\ xRy\ \wedge\ yRx \Rightarrow x = y$)
- transivity ($\forall x, y, z \in X\ xRy\ \wedge\ yRz \Rightarrow\ xRz$)

A linear order is a relation of partial R order which additionally satisfies the condition

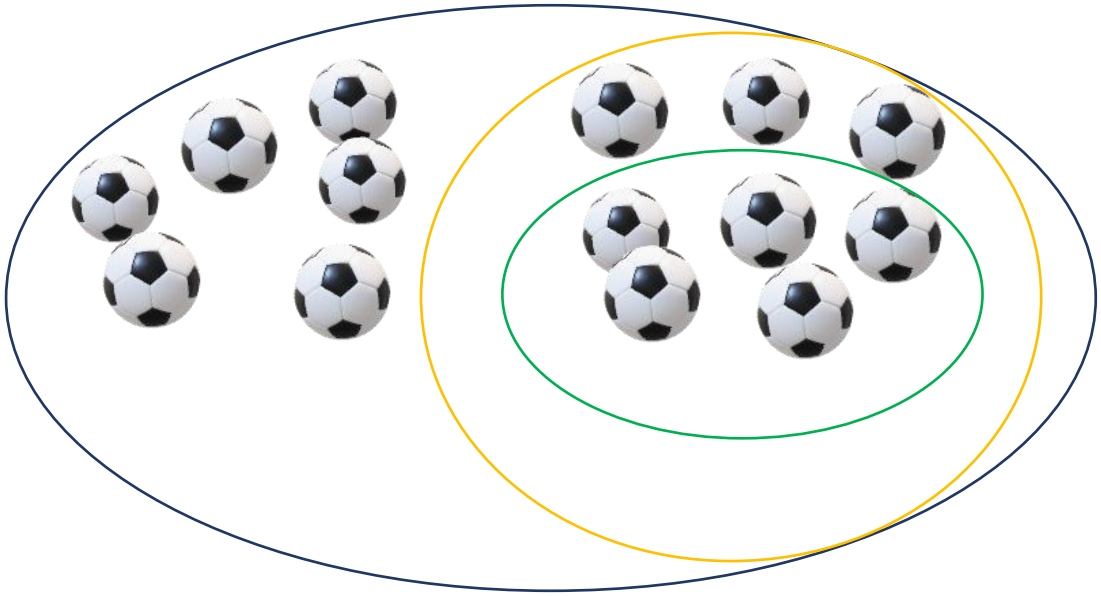
- coherence ($\forall x, y \in X\ xRy\ \vee\ yRx$)

Each linear R order generates the so-called acute S order, defined as follows:

$$xSy \iff xRy \wedge x \neq y$$

It is easy to notice that the relation $\leq$ is a linear order, and the relation $<$ is an acute order on the set of natural numbers.

In primary education, the teacher attempts to teach children the natural order between numbers. Properties of order such as transitivity or coherence do not need to be named. These properties should be discovered by children on their own, as if while playing. A child should notice that, for example, if 8 balls are more than 5, and 14 balls are more than 8, it is known that the set of 14 balls is larger than the set of 5 balls.



The order of numbers is of great significance for learning arithmetic. Text tasks are the best for this purpose.

Example 2. Ania was second in line to ice cream, and there were three more people behind her. Basia was at the end of the queue. Which place did she take?

Example 4. The fourth chapter of a certain book is 13 pages long and ends on page 67. What page does it start on?

Note that there is a certain difficulty in both of the above tasks. In the problem from example 3, the calculation 2+3=5 will not give the correct result, because it must be remembered that Basia is also standing in the queue. In turn, in the problem from example 4, the result 67-13=54 is also incorrect because it does not take into account the fact that page 67 also belongs to the fourth chapter.

The ordinal aspect of a number reflects its position on the number line. Coherence implies that two different numbers can always be placed on the axis, one on the left and one on the right. Transitivity guarantees that if we place the numbers *a* and *b* on an axis, and then add the number *c* to the right of the larger of the numbers *a* and *b*, it will also be located to the right of the smaller of them.

To fully reflect the nature of natural numbers and introduce a number line, however, we need a measurement aspect that will allow us not only to say that one number is greater than another, but will answer the question of how much greater it is.

Measurement aspect

Children aged 7-10 are perfectly aware of the possibility of measuring various physical quantities/sizes. They already know some of the measuring instruments and some units. This is confirmed by the results of research conducted in November 2018 (Żądło-Treder, 2019).

In the measurement aspect, a number is used to measure, among others: length, area, volume, weight, time or temperature. For this purpose we use denominated numbers. The key concept required to understand the measurement aspect is „unit". In the first stage of teaching, we use imprecise units. In the case of length, it may be a step (How many steps does a school corridor measure?), a palm (How many palms does a hand have?) or a pen (What is the circumference of a desk expressed in pens?). The unit of area may be, for example, a floor tile (How many tiles are there on the floor?) or a napkin (How many napkins do we need to cover the table?). The volume can be expressed, for example, in glasses (How many glasses of water can be poured into a pot?) or ping-pong balls (How many balls will fit in the box?). We can measure time, for example, by the number of passing cars or simply by counting out loud. We can weigh, for example, using water bottles or pebbles.

Obviously, when experimenting, children should note that the results of such measurements are not accurate. When walking down the corridor, the child will take longer and sometimes shorter steps. An adult will take fewer steps. We can count slower or faster, the pebbles can be heavier or lighter, and the napkins can be smaller or larger. This makes the results difficult to compare and therefore there is a need to standardize measurement units. We shall now briefly discuss the units of measurement that children should be introduced to at the early school stage education and provide sample tasks related to them.

Length

The length units we introduce to children are: millimeters (we measure e.g. the length of a nail or a SIM card), centimeters (height, bench length), meters (track length, building height) and kilometers (distance between cities, river length). We can also mention other units such as decimeters, nanometers or light years.

The basic measuring instruments that we should familiarize children with are: a ruler, a tailor's meter, and a bicycle or car odometer.

Examples of tasks related to length: measure your friend's height, the length of a stick, the circumference of a painting, the diameter of a hole in the wall. Below are simple text tasks using the concept of length.

Example 5. The distance from Mrs. Agnieszka's house to her son's school is 3 km, from the school to the shop – 4 km, and from the shop to her home – 5 km. Mrs. Agnieszka took her son to school in the morning, then went shopping and returned home. What distance did she cover?

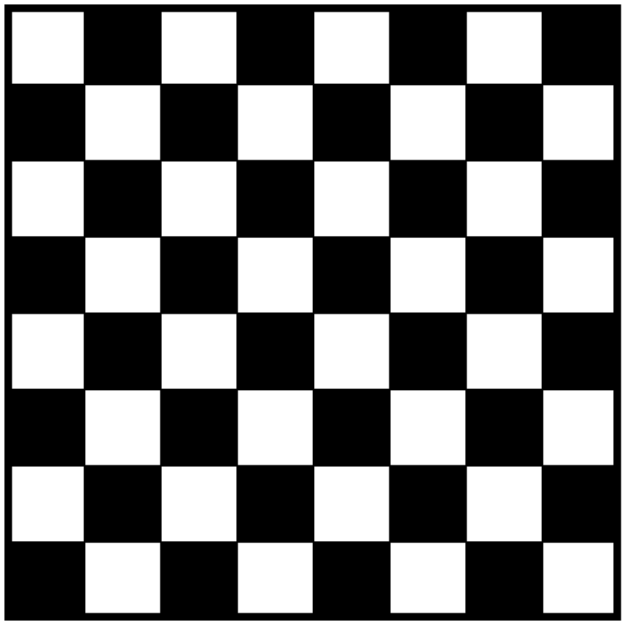
Example 6. The card is 30 cm long and 21 cm wide. What is its circumference?

Surface

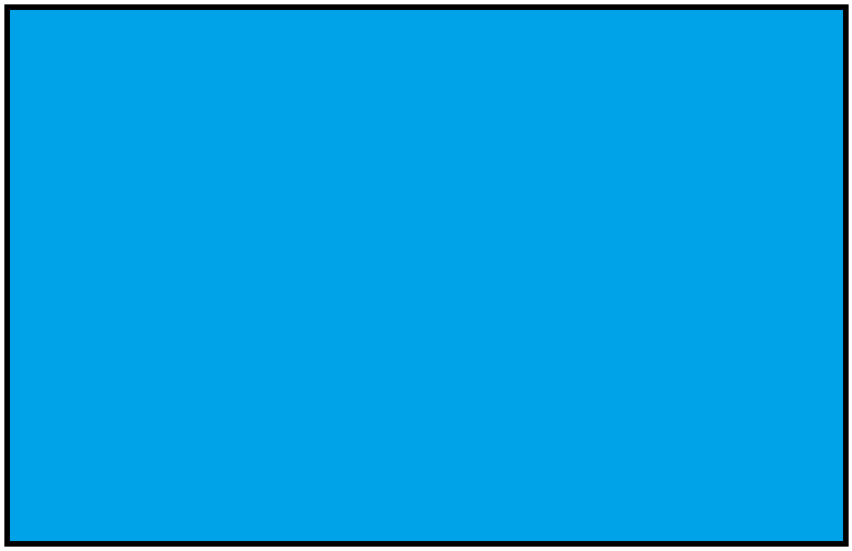
This is a more difficult quantity to measure. It requires multiplication skills. At this educational stage, a sensible approach to developing students' intuition will be the tiling method, i.e. checking how many elements („tiles") with a given surface area will fit in the considered area.

Once children know multiplication, we can try to calculate the surface of areas using both dimensions if said dimensions are small natural numbers or if a child is using a calculator. These quantities are expressed in millimeters, centimeters or square kilometers. It is good to illustrate text tasks related to measuring area with a suggestive drawing.

Example 7. Calculate the area of an 8x8 chessboard if one square is 9 cm^2.



Example 8. What is the area of a swimming pool that is 25 m long and 16 m wide?



Volume

In the case of we focus more on developing intuition and experimenting. Calculating the volume of a simple figure, such as a cuboid, requires two multiplications and often leads to large results, so we leave calculating volume for a later stage of education. We introduce the concept of „liter". Instead of using a measuring cup to measure, we can use vessels with a known volume, such as a glass or a half-liter bottle.

Mass

The units of mass that children should learn are: gram, decagram, kilogram and tonne. While children encounter the first three units in everyday life (e.g. in a store), one tonne may be something unknown to them. You can make children realize its value by telling them, for example, how much an elephant, a truck or a ship weighs. For measuring weight at school, we can use a kitchen, bathroom or weighing scale. In the latter case, instead of weights, we can use objects of known mass (e.g. a package of raisins or a bottle of water).

We can also use weight in text tasks.

Example 9. Rafał's mother has 1.5 kg of apples. For an apple pie she needs 3 kg. How many apples does she have to buy?

Time

Children encounter time and its units from an early age. However, this does not mean that children can measure it and perform time calculations. Since there are 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day, 7 days in a week, and months and years can be shorter or longer, time calculations are more difficult for children than length or mass calculations because they are not based on the decimal system.

In order for children to become intuitive about time, it is worth familiarizing them with a watch (both electronic and analog), a stopwatch, a timer and a calendar (one with months and days of the week).

Time-related tasks that we can give children to solve may combine the measurement aspect with the plural or ordinal aspects.

Example 10. Marek left for a horse camp on July 23 and returned on August 8. How many days did the camp last?

Example 11. Zosia planted wild strawberries on June 4. The holidays started on June 25. The wild strawberries bloomed in the seventh week after planting and bore fruit 3 weeks later. In which week of the holiday did the wild strawberries bloom and in which did they bear fruit?

Example 12. Marysia slept for 8 hours and 25 minutes last night. She woke up at 6:18. What time did she fall asleep?

Temperature

In the case of temperature, the teacher's task is to explain to children that the values they read on the thermometer have a slightly different meaning than those read on a ruler or scale. If it is 20ºC in a given city, it does not mean that it is twice as warm as in the mountains, where the thermometer shows 10ºC. It just means it's 10 degrees warmer. The scale we use is an interval scale, not ratio.

Another problem a teacher may face is negative temperatures. After all, negative numbers appear in the next educational stage. A possible solution is to say "6 degrees of frost" instead of -6ºC.

Algebraic Aspect

We speak about this aspect primarily by looking at natural numbers as a certain algebraic structure, i.e. a set with arithmetic operations. We will not discuss this topic in details in this paper, but please bear in mind that addition and multiplication are internal operations in the set of natural numbers, and subtraction and division are not internal, so in younger grades we perform these operations on pairs of numbers such that the subtracted or divided gave a natural number, e.g. 5-2, 34-28, 15:5, 28:4.

At the same time, using children's already developed operational thinking and their awareness of the reversibility of certain operations, we teach subtraction almost simultaneously with addition, and division almost simultaneously with multiplication. This is a very natural process, similar to learning a foreign language where we practice both translation from our native language into a foreign language and vice versa.

Children aged 7-9 are not yet prepared to introduce mathematical variables. This does not mean, however, that we cannot familiarize children with certain arithmetic laws, such as the distributive nature of multiplication and addition. It is best to introduce these concepts using examples, showing, for instance, that:

$$5\cdot(3+4)=5\cdot 7=35=15+20=5\cdot 3+5\cdot 4.$$

Cuisenaire's blocks are a great teaching aid that combines the numerical, ordinal and measurement aspects of numbers.

Source: photo by Annielogue – Own work, CC BY-SA 3.0, https://commons.wikimedia.org/ w/index.php?curid=18145024.

Coding aspect

In this aspect, numbers act as specific codes or, in other words, names that distinguish given objects. We encounter them, for example, by writing down our friends' phone numbers, numbers on football players' T-shirts or car license plates.

If the teacher asks children to stand in a row and count to three to form three groups (children numbered 1, 2 and 3), they should be made aware that group number 1 is just as important as group number 3.

Conclusions

In this paper we briefly reviewed the aspects of natural numbers that should be introduced to children as part of early school mathematics education. The most important aspects include: plurality, ordinal, measurement, algebraic and coding.

The difficulties that a child may encounter when learning aspects of numbers and to which the teacher must apply an appropriate approach are a topic for a separate paper. The most important ones include:

- the existence of negative numbers (e.g. negative temperatures or basement floors in a shopping mall);
- learning about fractions (e.g. when trying to measure the length of a carpet in meters or dividing a cake);
- unit conversion (e.g. kilometers/miles, kilograms/pounds, euros/dollars);
- problems at the intersection of plurality and ordinal aspects (e.g. how many floors are there between the fourth and eleventh?);
- exceeding decimal thresholds in arithmetic calculations.

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AMENDING THE SCHOOL READING LIST AND ITS APPLICATION IN CLASSES I-III

(*Magdalena Palacz*[1])

Summary

Promoting reading, which has been replaced by audiovisual culture, is a challenge for contemporary teachers. The update of the reading list for grades I-III was intended to support teachers in promoting readership, because the proper selection of books and their attractive use during classes are key issues in developing children's interest in the written word. The article presents research results on the use of new reading materials in early school education and the methods used in working with books.

Keywords: school reading materials, early school education, early school teachers.

Introduction

Contemporarily audiovisual culture has largely dominated human contact with the written word. The simplified pictorial message that accompanies people, including children of younger school age, on a daily basis makes the desire to experience and understand another form increasingly less common and less attractive. The challenge contemporary early school education teachers are facing is showing the possibility of discovering the value of reading as an interesting adventure. Well-selected reading and work methods that engage the reader are necessary to make the child who has a range of other entertainment to choose from want to read another book.

1. Updating the reading list and working with books in grades I-III

The younger school age is conducive to literary initiation. Required reading/books, i.e. „sets of works of literary or scientific literature that school or academic students are obliged to read or study" (Okoń, 2001, p. 2008) should be adequate to the age, abilities, needs and interests of pupils. Although the reading list is commonly called a canon, which in Greek means an unchanging and known norm (Lewandowicz-Nosal, 2017), the criteria for assessing a book are by no means constant. Although many of the proposed titles promote universal content, the relevance of the form and context is transient. For many years, only symbolic changes were introduced, ignoring numerous cues and signs regarding the need to amend and update the reading list. During the period of Katarzyna Hall's governance over the Ministry of Education, teachers were given the freedom of choice regarding required reading by removing the list of required reading for early childhood education pupils from the core curriculum, but this decision did not bring tangible results, as teachers continued to choose the same books that were being selected for years. The update of the reading list, taking into account contemporary children's literature, was introduced only in the Regulation of the Minister of National Education of February 14, 2017 on the core curriculum for preschool education and the core curriculum for general

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education for primary schools. It offers 24 reading suggestions for grades I-III, from which the teacher can independently select books suitable for their students to read together and individually. The content of the document does not assign books to the curriculum of individual classes or impose the need to cover any of them, respecting the diversity of class groups and the agency of students. The list includes classics as well as recent titles. Consistently with the criterion adopted by ORE contemporary literature in the reading list consists of books published post 2001. These are the following titles:

- Justyna Bednarek, *Niesamowite przygody dziesięciu skarpetek: (czterech prawych i sześciu lewych)*;
- Waldemar Cichoń, *Cukierku, ty łobuzie!*;
- Agnieszka Frączek, *Rany Julek!: o tym, jak Julian Tuwim został poetą*;
- Grzegorz Kasdepke, *Detektyw Pozytywka*;
- Barbara Kosmowska, *Dziewczynka z parku*;
- Marcisz Pałasz, *Sposób na Elfa;*
- Joanna Papuzińska, *Asiunia*;
- Danuta Parlak, *Kapelusz Pani Wrony*;
- Barbara Tylicka, *O krakowskich psach i kleparskich kotach: polskie miasta w baśni i legendzie*;
- Łukasz Wierzbicki, *Afryka Kazika*;
- Łukasz Wierzbicki, *Dziadek i niedźwiadek.*

In August 2021, the required reading list was updated again. Three older titles and the above-mentioned modern book entitled *Sposób na Elfa* by Marcin Pałasz were removed from the list. The following titles have been added:

- Dorota Gellner, *Wścibscy*;
- Julita Grodek, *Mania, dziewczyna inna niż wszystkie. Opowieść o Marii Skłodowskiej-Curie*;
- Tom Justyniarski, *Psie troski, czyli o wielkiej przyjaźni na cztery łapy i dwa serca*;
- Piotr Kordyasz, *Lolek. Opowiadania o dzieciństwie Karola Wojtyły* (fragm.);
- Zofia Kossak-Szczucka, *Kłopoty Kacperka góreckiego skrzata*;
- Åsa Lind, *Piaskowy Wilk*;
- Aleksandra i Daniel Mizielińscy, *Którędy do Yellowstone? Dzika podróż po parkach narodowych*.

It is worth noting that textbooks and exercise books used in early school education often suggest or force reading selected books in a given year of schooling. Due to the fact that most of the educational packages were designed and implemented in earlier years, they do not yet contain proposals for applying these items. However, a competent teacher should not make the selection of books for pupils dependent on the editors' ideas.

Appropriate selection of literature suiting the interests, abilities and mental needs of children, paying attention to the graphic design of the edition, is not enough if, during classes, the teacher drowns students' enthusiasm for school reading. M. Iwanowicz (2006) draws attention to the mass schematism of the analysis and interpretation of literary works, which releases the teacher from the burden of turning an act of reading into an unforgettable

adventure which is a pretext for acquiring knowledge and skills. As B. Myrdzik (2007) emphasizes, this „technocratic" tendency is aimed at professional preparation for analytical exercises, although it is far from awakening students' love for books. To make this possible, attention should be drawn not only to the text, but also to the message of the work and prodding a recipient towards reflection through the appropriate reading experience. In this manner, a child has a chance to believe that reading books is worthwhile because books have something important to convey, which is often achieved in unconventional teaching situations (Radzikowska, 2017). As reported by E. Shefler (2011), early school education teachers have low competences in terms of inspiring and creatively engaging children through various pedagogical activities that reveal the world of literature to pupils. They prefer ready-made, proven solutions contained in methodological literature that they can apply in their work, which explains their reluctance towards new items in the canon of required reading. Such teachers often limit themselves to the utilitarian use of literary texts as a pretext for engaging in talks on nature, ecology, art, education, and for solving mathematical activities the purpose of which is far from literary goals. K. Zabawa (2012) emphasizes that although early school education is based on the integration of content, in relation to literary education integration of content should be a secondary goal. Zabawa explains that information relating to other areas of study should be explicated as necessary to fully understand the content of the work. However, adopting an attitude focused on finding such facts may alienate a young reader from reading, preventing him from being fascinated by a literary work. There are also situations when the teacher focuses on the piece, but its analysis is reduced to the only correct interpretation. E. Marek (2013) calls this phenomenon based on the dominance of closed problems the „dictate of one answer". According to this author, in school practice, questions posed by the teacher prevail and this, in turn, inhibits students' inquisitive thinking. The choice of delivery methods and lack of approval for students' creative solutions are also common.

School conditions – the curriculum, its implementation and assessment of teaching effectiveness – favor the preference of students' characteristics that facilitate the implementation of the teacher's tasks, i.e. intelligence, acumen, perceptiveness, ingenuity; these qualities, however, must be displayed within the framework defined by the task. Children who are truly creative, full of inventiveness and who ask a lot of unconventional questions interfere with the lesson and take up valuable time, so this type of behaviour is suppressed in the classroom (Tokarz, 2009, pp. 248-249; after: Kruszyńska, 2014, p. 38).

Perhaps this is also justtified by the current approach to education, which emphasizes preparation for the exam as the ability to answer in accordance with the key, i.e. the line of thinking of the person who formulated it. However, limiting the student's freedom in this area means that the book does not have a chance to become a polyphonic piece, reaching every reader in such a way that they can find something for themselves in it (Niesporek-Szamburska, Wójcik-Dudek, 2017). Therefore, teachers should not only allow, but also encourage children to go beyond the proposed interpretation and even beyond the text, and indicate that this is the correct direction of exploration. Despite many years of contact with children, in many cases teachers are indifferent to their needs. They forget about the real importance of familiarizing students with the world of literature, which is presented by Kłakówna (2014, pp. 166, 185; after: Wiśniewska-Kin, 2016, p. 137):

> You don't read literature the same way you read a lawnmower manual.' There is no simple translation like: he has read it, so he is vaccinated against the evil of the world, saved, well-bred and whatever else is positive. Therefore, school curricula may only be about creating „aura" for reading, searching for and recognizing problems and meanings in reading, and not about checking off and passing the reading. […] It's not about the quantity of reading, but the quality of reading.

Recognizing functions of literature, which teachers like to use as a means to shape students according to a model, as the primary functions deprives students of the pleasure of reading. Forgetting about the Luddite theory of literature, which proclaims the importance of reading as entertainment and making this activity an autotelic act, leads to an intensification of reluctance towards required school reading without prior knowledge of these books (Konopnicka, 2013). Z. Adamczykowa (2011), on the basis of her own work with students of early school education and analysis of lesson plans developed by said students, listed the most common substantive and methodological errors in the literary education of children of younger school age, which are probably associated with teachers with limited work experience, but may be perpetuated also in the following years:

- trivializing the essence of books;
- instrumental treatment, aimed at achieving non-literary goals emphasized by the curriculum;
- the primacy of linear text analysis;
- focusing on the creation of the work and author's biography;
- difficulties in functionalized and versification analysis in relation to poetry;
- incorrect use of theoretical and literary terms, e.g. author – lyrical subject – narrator, fantasy – fiction;
- lack of ability to perceive the meaning of texts from pupil's point of view;
- focusing on author's creative idea instead of the individual way of receiving, experiences and views on the work.

The multitude of these difficulties draws attention to placing greater emphasis on the literary education of elementary school pupils. It is necessary to equip future teachers with the competences necessary to consciously select reading material and create concepts for implementation of said material in the school classroom. Moreover, in relation to the changes occurring daily in the modern world, it is important to develop the need for self-education and systematic updating of one's knowledge. With respect to practising teachers, especially those with many years of experience, it is necessary to improve their scientific and pedagogical competences in the field of discovering, getting acquainted with and using current knowledge about the child as a recipient of literature (Centner-Guz, 2011). These considerations, however, are not a criticism of teachers in general, because everyone knows many people who are passionately involved in their work, also in the field of reading education. However, these considerations constitute an inspiration for reflection on neglected areas in the education of future teachers, as well as a stimulus for self-reflection by practising teachers.

2. Traditional and modern methodological solutions used in working with books in grades I-III

The use of new reading material suggestions by early school education teachers is undoubtedly an important stage in adapting literary education to contemporary changes in the world, including children's personalities. Unfortunately, if we use them without introducing changes in the way we work with books, the chances of achieving success in developing children's motivation to read and expanding their reading interests are slim.

According to the core curriculum and the conditions and methods of its implementation, it is recommended that the content to not be presented in the form of a classic school lesson, but to be based on child's multidirectional activity. The originator of creative solutions is the teacher who uses various methods and forms of work to help students learn values and develop self-awareness and motivation to learn. The teaching process should take into account natural learning strategies: perceptive-reproductive, perceptual-explanatory and perceptual-innovative, as well as the selection of various teaching methods adapted to the learning style of the class team. Cultural changes in which pupils participate force a teacher to develop an innovative attitude towards the teaching process. Innovation in this field should violate existing patterns, inspire creative activity consisting in modifying the presented world according to one's own concept and moving away from the forms of work designed in methodological guides in favor of creative solutions tailored to the pupil's potential (Szefler, 2011). As reported by B. Magoń (2001), literary initiation conducted at school plays a fundamental role in a child's reading education, because it is, or at least should be, the result of thoughtful actions carried out by the teacher. Utilizing attractive methods of working with books helps the child open up to the beauty of literature, activate its imagination and awaken children's curiosity about the world, which is thus transformed into curiosity about books. The student should have the opportunity to explore books in a polysensory way, because only those activities that evoke various experiences will be remembered. A. Józefowicz (2014) emphasizes that such an approach to working with a book, which aims to inspire pupils and move not only their minds, but also invoke their emotions, leads to an authentic experience of reading and the development of child's creative attitude. Therefore, the teacher should select methods that will trigger students' verbal, theatrical and artistic expression, as well as allow for the unrestricted play of imagination and pupils' own creative interpretation of the work.

Classifications of working methods distinguished by various authors include methods that have been practices for years, but also methods that were born as a result of the development of information and communication technologies, creative solutions that are just gaining popularity in teaching and educational work, and those methods that have been introduced into educational practice of early school education, a long time ago but are omitted in Polish language education.

Using the division into traditional and modern methods, the methods used by a smaller or greater number of teachers to convey the reading content to pupils will be considered.

Introducing pupils to required school reading most often begins with the use of auditory forms that are intended to convey and familiarize children with the content of the book. As research by M. Centner-Guz (2011) has shown, the most popular among

the verbal and visual methods applied by teachers is reading aloud, which was indicated by over 90% of teachers out of 90 respondents. This basic form raises no objections, because when this activity is performed by a teacher who reads out loudly and clearly and at the appropriate pace with the right intonation, the child has the opportunity to more fully experience the content which are being conveyed.

Other frequently used auditory forms are telling stories and looking at illustrations, which were indicated by over 80% of respondents. The first form makes it easier to receive and understand the text by translating it from the literary form contained in the book into a language more familiar to the child. B. Lisowska (2014) emphasizes that it requires the teacher to thoroughly familiarize himself with the content of the work and use the means of living words. The plot can also be presented by children, which will develop their language skills and cause-and-effect thinking. Viewing book's graphic design during classes confirms the importance of paying attention to illustrations when selecting reading material for pupils, because the combination of the text and illustrations plays an important role in the reception of the work.

Recitation is a method practices by almost 90% of respondents. The pupil should be prepared for this method by listening to a teacher and pupils reading the text and analyzing it, which should lead to pupil understanding the text. As reported by B. Lisowska (2014), recitation is used mainly to bring children closer to the beauty of literature through its memorization. This results in submission to the rhythm and melody of recited text. However, the author emphasizes that when selecting texts or their fragments to be used in conjunction with this method, one should remember to apply the principle of difficulty and adapt the selected texts to the abilities of children, including those pupils who have pronunciation defects.

The use of other forms related to verbal expression is equally important, but was indicated by only about 55% of respondents. The rather large group of teachers that avoids this type of activity may constitute an evidence that children find it difficult to talk about the text. However, these methods should not be omitted in the practice of Polish language education. The forms of reading work indicated by teachers of grades I-III during the research conducted by I. Chmielak (2011) include verbal methods such as: „talks, discussions, brainstorming, mind maps, story maps, character descriptions". It is valuable to enrich classes with creative verbal and written tasks. K. Klimek-Michno (2018) proposes interesting activities of this type, e.g. the game „From a letter to a story", based on formulating sentences starting with a given letter and relating to the book in question. Another interesting task is to create sentences with a word given by another person and related to the discussed book. The author also mentions creative language games such as: preparing a letter to a favourite literary hero, conducting a telephone conversation between fairy--tale characters, creating new stories by transforming the content of the book and linking it with the threads and characters of another work or writing short stories based on randomly selected cards that present various items found in required school reading. Creativity-developing tasks can also take form of a group creation of a story about props taken out of a trunk or a game of „what if", which involves answering questions about imaginary events, e.g. What would happen if the heroes of the story came to our school for one day?

The inability to verbalize one's observations and internal experiences related to the perception of a literary work probably results in the choice of other forms of expression. As E. Szymik (2017) emphasizes, thanks to the use of the intersemiotic translation method, a child can non-verbally present his or her impressions after reading the work and demonstrate the feelings reading said work triggered. The description of one's own creation, taking into account the motives that guided a child when creating individual elements, is of fundamental importance because it is an indirect interpretation of the work. However, the use of physical activity for this purpose is negligible, as it was indicated by only 5% of surveyed teachers in the previously mentioned study. However, artistic interpretation of readings is popular, it was indicated by as many as 88% of respondents. Illustrating required books using iconic signs that indicate objects and images that reflect their appearance requires analytical analysis of the work (Szymik, 2017). Drawing comics is an attractive and common form, which additionally promotes the development of cause--and-effect thinking and the ability to formulate statements – character dialogue. The above-mentioned method of presenting the content of books and understanding their message stimulates creative activity not only in terms of artistic expression, but also verbal expression. This ensures a smooth transition from the iconosphere to the logosphere, triggering children's enthusiasm, as evidenced by the cheerful noise that usually accompanies works inspired by reading.

A common form used during classes focusing on processing literary texts, indicated by 90% of teachers in the study conducted by M. Centner-Guz (2011), is staging. A. Janik (2017) believes that it is the most popular form of theater education, which develops children's imagination, perceptiveness, stimulates creative inventiveness and familiarizes them with various means of expression.

Staging is often mistakenly equated with drama, because they have one thing in common – taking on a role, independently or presenting scenes using puppets, but their premises are different. These differences are explained by K. Sobieszczańska (2016), who emphasizes that the beginning and end of drama are the child's everyday experiences. Theatrical roles assigned to pupils in the staging impose on the actors not only the text they are to deliver, but also the creation of the character, i.e. the way he or she behaves and emotions. Drama, on the other hand, allows the child to improvise, owing to which fact a pupil authentically embodies the character and identifies with it because he decides how he will behave in a given situation. The fundamental difference between the presented activities is also their recipient. In drama, children present scenes and act out roles for themselves, not for the audience. Thanks to these activities, children have the opportunity to experience certain situations, understand emotions and problems, become participants in them and receive feedback about the character and themselves. This is only possible thanks to pupils using their own knowledge about life and previously acquired experiences. A. Kącki (2011) calls drama an interactive method because by actively involving students in the teaching process, they can acquire knowledge, skills and social competences through the literary text and their own actions, experiences, multi-sensory cognition and discovery. Drama can be both a didactic and educational method. This author emphasizes the advantages of the use of drama in shaping attitudes, because drama develops child's empathy and verbal and non-verbal communication by exploring one's own feelings and practising expressing them. This method is therefore based on psychodrama, about which its creator, J. Moreno, said: „Play yourself as you have never

been, so that you begin to be as you could be" (Kącki, 2011, p. 213). Unlike stagings, drama activities always end with a conversation about the impressions, feelings and observations of each person taking part in them, but also about their conclusions from the observers' point of view. In this way, drama activities strengthen a pupil as an individual and the entire class team.

According to the cited research results, the presented methods and forms of working with books are most frequently selected by early school teachers. This does not exclude the use of modern solutions; these solutions are, however, used less frequently. Proven methods that have been practiced for years seem to be the most effective, but in the current era of civilizational changes, it is worth using more attractive methods that will compete with contemporary children's entertainment and present teaching activities as interesting and far removed from school „boredom".

Modern methods are most often based on traditional ways of working with books. However, these methods are modified or made more attractive by the use of interesting teaching aids. Imparting upon them a more impactful form is achieved by bringing said methods closer to the experiences of a modern child or by going beyond known patterns that no longer arouse enthusiasm. Creative forms of work are based on child's active activity in cooperation with the teacher or under his direction.

The modern requirement for auditory forms used when working with required school readings is the use of information technologies. Audiovisual aids and materials, according to the previously cited research by M. Centner-Guz (2011), are used only by over 40% of teachers of grades I-III. The reason for rarely using them may be the desire to limit child's contact with said methods, as he or she spends a lot of time at home on entertainment using a computer, TV, etc. However, the respondents argued differently, namely indicating the lack of skills regarding operating technological devices. Although many years have passed since this research was conducted, school practice shows that although schools are equipped with modern equipment, it is often covered with dust for the same reasons, i.e. teachers' inability to operate it. However, T. Kłosińska (2011) encourages the use of a computer in the teaching process, because the reception of image and sound, as well as taking actions related to the development of a literary text using a computer, stimulate internal motivation, cognitive activity, imagination and the ability to solve problems. Receiving images is a skill that children acquire from an early age, so the use of this type of media appeals to them easily.

A modern trend in education, related to games that are close to pupils, is the use of the gamification method. As reported by A. Nowak (2017), it uses techniques used in games for situations that are not related to games. In this way, these techniques can be used when working with school reading material. This method is attractive for pupils because it encourages them to get involved and it combines learning with entertainment. Its main goal is to increase motivation, efficiency and positive attitude towards learning. A. Nowak lists game-specific elements that are used in gamification:

- score – reward for individual activities;
- levels – the player's rank and his position in the ranking relative to other people;
- leaderboards – a summary of the number of points scored during the game;
- awards – player achievements;
- Challenges – tasks that, when completed, allow you to move to a higher level or gain points.

All reward elements motivate pupils and stimulate the desire to compete. However, the competition emphasized by the author has a noble purpose – second-grade students of primary school who took part in a weekly series of classes utilizing the gamification method, completed tasks and scored points to help homeless dogs. Setting this type of goals is advisable so that children learn not only for their own reward, but also to serve other people. During the project, the children discovered that the actions of each of them were equally important and they motivated each other to act, learning to cooperate. However, it is important for a teacher to first clearly define the principles and goals of the activity when using this method. Planning the work must include organizing the room, creating the right atmosphere (e.g. introducing a stuffed animal – the patron of the task), preparing a network of various tasks and teaching resources, as well as constructing homework tasks, which are also a rewarded part of the game. However, it is worth putting effort into using this method, because it allows children to acquire knowledge, skills and social competences in an attractive way based on school reading, while integrating other areas of education.

Creating lapbooks, i.e. the so-called „books on your lap" is an increasingly popular method that also integrates content. As reported by A. Kopeć (2014), a „lapbook" is a thematic folder that contains systematized information on a given topic. Its advantage is its unusual nature – the space of the folder is interactive, as all information is placed in it in an interesting way – using pictures, diagrams, drawings, texts, riddles, poems, puzzles or games, placed in pockets, sticky books, accordions, etc. The author emphasizes that this way of systematizing knowledge is common in the United States and increasingly popular in Poland. Although the idea of making such a learning tool was most often used in the home education system, it is increasingly popular in schools and libraries. This folder becomes a diary that the student will be happy to look at again. Unlike the still popular reading diaries, a lapbook creates the opportunity for interaction and fun. Therefore, the lapbook method also serves to later recall information on a given topic, and at the creation stage, it facilitates acquiring many skills that are not related to the topic, but to constructing individual elements of the „paper theater on your lap" and composing them into a logical whole. When creating lapbooks, children learn to analyze and synthesize the content contained in the assigned reading. This prepares children to organize knowledge using a mind map, which is useful at subsequent stages of education.

A modern method that is increasingly finding its place in Polish early school education is the Kamishibai theater. As C. Langier (2014) emphasizes, this method combines elements of storytelling, staging, improvisation, and Puppet Theater. It is used in preschool and early school education in the United States and Europe. A. Kubala-Kulpińska (2016) explains that the concept of „picture theater enclosed in a wooden box" comes from Japan, where in the 12th century, monks used it to pass on stories morality tales to children. This method has many didactic and educational valors, as it assumes learning through play, supports learning to read, triggers creativity, stimulates imagination and creative thinking, enables creative expression – verbal during presentation, artistic – when creating images, and develops concentration of attention/ability to focus. This method uses storytelling and accompanying images. K. Walasek (2015/2016) explains that this theater consists of showing pictures, one after the other, located in a wooden box, the back of which is empty. On the back of each drawing there is a text which the storyteller

reads aloud related to the previous illustration. It is recommended that it be enriched with additional improvised story elements, if the narrator already has such skills. The illustration, which is framed with wood, facilitates the viewers' visual focus and concentration on the text they are listening to. The great advantage of this form, compared to pictures in a book, is the presentation of the fairy tale as a whole, without the need to „interrupt" the graphics with text. Furthermore, the storyteller can also adjust the presentation time of individual frames to the viewer's perception.

Attractive, but still insufficiently popularized in work with reading materials are activating methods, which „constitute a type of an action, a way of working and teaching, which produces an active child – pupil, i.e. the subject of our interactions" (Ordon, 2015, p. 132). Their use develops originality and fluidity of thinking, develops research curiosity, imagination and fantasy, improves the ability to analyze information and process knowledge and experiences. Moreover, their use also has a positive impact on the teacher, as it promotes teachers' self-improvement in the methodological area and deepens their substantive knowledge. Their selection depends on the topic of the classes, the age of the children, their abilities and preferences in terms of forms of work, the size of the group, the time the teacher has and the available materials. K. Dmitruk-Sierocińska (2015) distinguished groups of activating methods and most popular activating techniques used in integrated education: integration: spider's web, „put fears in a hat"; defining concepts: brainstorming, snowballing; hierarchy: pyramid of priorities, diamond ranking; creative problem solving: fish skeleton, rug of ideas; working in cooperation: password game, puzzle; diagnostic: metaplan, Edward de Bono's thinking hats; discourse-related: debate „for" and „against"; developing creative thinking: a word of cases, a plot from a pot; group decision making: decision tree, six pairs of shoes; planning: star questions, future planning; didactic games: magic calculator, strange sayings; accelerated learning: memory hooks, chain association method and evaluation: smiley faces, basket and suitcase. According to the research results of U. Ordon (2015), the use of the above methods, apart from activating children and making classes more attractive, also improved communication, cooperation and cooperation in the group and in the pupil-teacher relationship, developed children's sense of self-confidence, faith in their own strengths and made them more creative. The education results produced when applying these methods were also better than before, which confirms the validity of using said methods during classes, including methods based on required books, especially the newly proposed books. Including this type of solutions increases the chances of full use of books' values and enables multi--sensory contact with the content of the discussed literature.

Modern methods of working with books are constantly changing, some are becoming obsolete, while others, although introduced many years ago, are gaining popularity in an updated form. The solutions presented above are the solutions that are currently being disseminated by organizing workshops for teachers on this topic and discussing the indicated solutions in in contemporary literature. However, it should be remembered that the methods used should be selected and modified consistently with the needs and capabilities of the class team. However, the idea of modern ways of working with required books is an opportunity to awaken the reading interests of children at younger school age.

3. Methodological premises of the own research

Promoting reading among contemporary children of younger school age is undeniably, as previously mentioned, a challenge for early school education teachers. The postulates regarding achieving this goal by updating the required reading list and discussing said books in an attractive manner that activates pupils and motivates them to read the content of the books constitute a hint on how to meet this challenge. The application of these activities in school practice is still a subject to verification due to their implementation character and the reluctance of many teachers to introduce changes, which justifies the advisability of designing and conducting research on this sphere of early school education.

The primary goal of this research is: demonstrating the relationship between pupils' expectations, suggestions of the authors of educational packages and the actual use of various methods of working with new reading materials in grades I-III.

On these grounds, the primary research problem was formulated: What are the similarities and differences between the preferences of early childhood education pupils, the suggestions of the authors of educational packages and the actual way of implementing school readings by teachers of grades I-III?

Obtaining an answer to this question is possible through compiling the research results relating to specific problems, which are as follows:

1) What working methods are used when working with the latest required books for grades I-III?
2) What are pupils' expectations regarding the methods of working with the latest required books for grades I-III?
3) What methodological solutions for working with the latest proposed required books are suggested by the authors of the educational packages used?

In this research, independent variables were identified as the respondents, including early school education teachers and pupils of grades I-III. The dependent variables consist in new school required readings and work methods used during their implementation in school practice. By determining the previously mentioned dependent variable, its quantitative and qualitative indicators were distinguished: teachers' statements regarding the use of new school required books in their work, pupils' statements about their own reading preferences and the attractiveness of school classes related to required books in which pupils participate, and work methods indicated in educational packages.

The research utilized a survey method with the use of a questionnaire technique, which was aimed at early school education teachers. The interview technique was also used to obtain the desired information from pupils of grades I-III. A qualitative type of interview was conducted, i.e. a group interview, also known as a focus interview. These methods were complemented by the analysis of documents, in this case educational packages, based on utilizing a previously constructed sheet.

The research was conducted from the beginning of April to May 17, 2019. Firstly, a survey was conducted among 86 teachers of grades I-III. Unfortunately, despite the teachers' declaration of willingness and readiness to participate in the study, 18 questionnaires were not returned to the researcher. Moreover, 9 potential respondents refused to give an interview due to lack of time, reluctance motivated by lack of knowledge regarding new required reading suggestions or unfavourability towards the open questions included in the questionnaire.

The next stage of the research consisted of conducting a group interview among 12 groups of students from grades I-III, 4 groups from grades I, II and III, respectively. The participating children turned out to be competent respondents due to the multitude of information they provided, inspiring each other to actively participate and expressing themselves in talking about the books they read. The interviews were conducted with the consent, but without the presence of the class teachers, with exception of one of the groups due to the recommendation of the school principal. The purpose of this solution was to reduce the risk of distortion of results.

The culmination of the activities based on individual methods was a comparison of the information on the implementation of new required books collected among teachers and students of grades I-III and use of required books as recommended by the authors of school textbooks in relation to children's preferences and ideas.

The conducted research covered facilities located in the Limanowa and Nowy Sącz counties, located in the Lesser Poland Voivodeship. Selection of facilities was purposeful and based on the criterion of openness and friendliness of both the school management and the respondents towards the research being conducted. Ultimately, 59 teachers participated in the survey (23 teachers in grade I, the same number in grade II and 13 in grade III); however, in 9 of the received surveys, only the answers to questions 1 and 2 were analyzed, as they eliminated the indicated questionnaires from further study.

The research among pupils of grades I-III was conducted using the qualitative focus interview method, which, by definition, assumes the participation of homogeneous groups with the number of participants ranging from 6 to 8. The selection of respondents for the groups was purposeful and made with the help of class teachers. The criterion regarded pupils' personality traits and predispositions in terms of linguistic expression and was used in such a manner that the group consisted of respondents who would be active but would not dominate each other. Interviews were conducted with 12 groups of pupils representing 7 different schools. Pupils were representatives of grades I, II and III, respectively 4 groups from each of them. The total number of respondents was 85 (29 from grade I, the same number from grade II and 27 from grade III). The group's distribution is presented in the table, using letters (A, B, C and D) to distinguish groups in regards to representing different grades at the stage of early school education.

The documents were analyzed taking into account the educational packages most frequently selected by the surveyed teachers. Among the teachers of grades I and II the most popular packages were „Szkolni Przyjaciele [School Friends]" published by WSiP and „Elementarz odkrywców [Explorers' Primer]", created by the Nowa Era editorial team. Therefore, the entirety of both packages, was analyzed, which is addressed to grades I and II and consists of 4 parts each.

Teachers, in grade III, although they implement the previous core curriculum, also choose new school reading materials. However, they use the Ministry of National Education's textbook package „Our school" by M. Lorek and M. Zatorska, because the previously mentioned educational packages did not yet have an offer for pupils of grade III. These textbook package is correlated with exercise book titled: „Our exercises", published by „Nowa Era". The obtained materials, i.e. textbooks, exercise books, methodological guides, were analyzed in terms of the scope of new school reading material used and the proposed methodological solutions. This information was collected on a specially prepared sheet.

4. Analysis and interpretation of own research results

The research was undertaken with the goal of checking whether, more than 2 years after the entry into force of the previously-mentioned regulation, the new required books and their values occupy an essential place in the curricula implemented by early childhood education teachers. The research showed that only 9 teachers out of 59 respondents have been implementing the required reading canon practices for years, without introducing newer items. When formulating this statistic, the 9 respondents who refused to participate in the study after reading the content of the questions due to lack of knowledge in this area should also be included. However, none of the respondents indicated that they use solely the new proposed required books; this fact supports the opinion that good literature never gets old and it is worth using it because it constantly arouses children's enthusiasm. The above result showed that changes occurred in teachers' views regarding the required reading material. However, verification of this thesis required details and confirmation from both teachers and pupils. Although the proposed required books have many valors the fact of teachers discussing them without pupil's multidirectional activity may significantly impoverish their message. Therefore, the aspect of methodological solutions used in working with new school required books was also discussed.

The proposed new required books cover a variety of topics, so teachers of grades I-III who are willing to read any of these books have a chance to find among them literature adequate to the interests and reading capabilities of pupils in each grade of the educational stage which is being realized. Research has shown that teachers of grade II are the most eager to utilize new books. Teachers' preferences regarding the selected items were analyzed in consideration of division into classes teachers' run, as illustrated in the table below.

Table 1
The most and the least frequently selected required books

Title and author of the book	Grade I	Grade II	Grade III	Total
Niesamowite przygody dziesięciu skarpetek… J. Bednarek	13	19	4	36
Detektyw Pozytywka G. Kasdepke	11	10	7	28
Cukierku, ty łobuzie! W. Cichoń	9	13	2	24
O krakowskich psach i kleparskich kotach: polskie miasta w baśni i legendzie B. Tylicka	8	7	3	18
Kapelusz Pani Wrony D. Parlak	4	12	-	16
Rany Julek!: o tym, jak Julian Tuwim został poetą A. Frączek	4	6	5	15
Asiunia J. Papuzińska	3	4	8	15
Afryka Kazika Ł. Wierzbicki	1	5	3	9
Dziewczynka z parku B. Kosmowska	-	1	3	4
Sposób na Elfa M. Pałasz	1	1	1	3
Dziadek i niedźwiadek Ł. Wierzbicki	1	-	-	1

Source: own research.

The most frequently chosen among the latest proposed required books was the book by Justyna Bednarek *The Amazing Adventures of Ten Socks: (four right and six left)*, because it was covered by as many as 36 out of 50 surveyed teachers who declared the use of new reading books. This item is also the most popular of the given items among teachers of grade II. Pupils of the surveyed teachers of grade I read *Detektywa Pozytywka* by Grzegorz Kasdepke more often. The surveyed teachers of grade III most often discussed *Asiunia* by Joanna Papuzińska. The least popular is the book by Łukasz Wierzbicki entitled *Dziadek i niedźwiadek [Grandpa and the Bear]* and *Sposób na Elfa [The Way to the Elf]* by Marcin Pałasz. The obtained results are astonishing, as interviews conducted among 12 groups of pupils from grades I-III showed that during classes only such new required books were covered as: *Niesamowite przygody dziesięciu skarpetek: (czterech prawych i sześciu lewych) [The Amazing Adventures of Ten Socks: (four right and six left)*], *Kapelusz Pani Wrony [Mrs. Crow's Hat]*, *Cukierku, ty łobuzie! [Candy, you rascal!]*, *Detektyw Pozytywka [Detective Music Box]*, *O krakowskich psach i kleparskich kotach: polskie miasta w baśni i legendzie [On Krakow's dogs and Kleparz's cats: Polish cities in fairy tales and legends]*. This may indicate that the pupils were not representatives of all classes run by teachers who declared that they discussed other required books. Another explanation for the presented results may be the superficial treatment of these books by teachers, the conducative unattracitve classes, which are not remembered well by children and are only treated as one of many texts in the textbook read during the year. The research process included detailed information on the declared use of required books, including the scope of books and the reading method used. It was possible to provide more than one answer to a given item because it is possible to combine these methods, therefore the results do not sum up. Answers indicated by teachers of grades I-III are presented in the tables, in which the letter C means reading the entire book using a given method, F – using fragments of the book. Analogous references will apply to subsequent tables.

Table 2
Reading method and the extent to which new required books are covered in grades I-III

Grade	**Reading aloud by a teacher**		**Reading under teacher's supervision**		**Independent reading at home**	
	C	**F**	**C**	**F**	**C**	**F**
I	6	38	-	15	2	7
II	9	25	3	19	21	15
III	5	15	1	16	8	3
Total	**20**	**78**	**4**	**50**	**31**	**25**

Source: own research.

The summary of the use of individual reading methods shows that teachers cover a much larger number of new required books only partially, using only fragments of said books. Whereas grade I is not obliged to read books in their entirety due to the fact that they are just acquiring the ability to read, developing reading habits among pupils of grades I and II should be a permanent and major element of education. Perhaps this trend of referring only to short fragments of stories influenced the popular phenomenon among young people of using summaries of required books at later stages of education and the reluctance of adults to reach for books. As intended, the working methods used when covering new school required books were analyzed. The proportions of the use of individual methods in relation to covering books in grades I-III were not differentiated, so these methods are presented collectively.

Table 3
Methods of working with new required books in grades I-III

Method	Frequency of application		
	Frequently	Rarely	Never
storytelling	47	2	1
watching illustrations	39	9	2
listening/watching contents using audiovisual aids	23	27	
declamation	12	28	10
chat/discussion	46	4	
editing written forms	37	12	1
working with a book/exercise book	40	9	1
physical/motor activity	29	21	
arts	50		
comic books	6	29	15
assigned reading diary	15	8	27
staging	24	21	5
drama techniques	33	14	3
creating lapbooks	4	18	28
Kamishibai theatre	2	9	39
gamification	1	12	37

Source: own research.

Of the traditional methods, the most frequently selected were creating drawings or other pieces of art, a story and a talk/discussion. This indication was confirmed by pupils of grades I-III, but said pupils also often indicated working with a book or an exercise book. The small number of activities mentioned by pupils in which pupils participated while working with the discussed required books may indicate that the above recommendations are often the only and constantly repeated methods. Modern methods, such as creating lapbooks, gamification or Kamishibai theater, were used by a small number of respondents,

although the fact that they are included in work with pupils is optimistic, prognosticating that the number of teachers using these methods will probably increase in the future. In addition, respondents provided additional solutions often used in their work: trips related to the topic of a book, creating the so-called film reel with pictures created on the basis of the text, arranged in the order of events, mind maps, educational games.

The last two proposals belong to the group of activating methods, the use of which was declared by 29 out of 50 surveyed teachers of grades I-III, which they justified with examples of their use. However, only 15 people from this group of respondents described proposals related to new required books that are the subject of the research, the rest of the proposals referred to other works, most often appearing in the new core curriculum, but which have been covered for years. Ultimately, methods were proposed to be used when working with eight of the 11 items of new school required books. Among them, role-playing methods were popular, but other interesting games and tasks were also proposed. The most interesting or most often recommended methods are presented in the table below.

Table 4
Activating methods and techniques utilized in working with new required books in grades I-III

	Title and author of the book	**Applied activating methods and techniques**
1.	*Niesamowite przygody dziesięciu skarpetek…* J. Bednarek	Decision flowchart: „What lost, individual socks should do?”
2.	*Cukierku, ty łobuzie!* W. Cichoń	„Improper behaviour of Cukierek” Metaplan
3.	*Rany Julek!: o tym, jak Julian Tuwim został poetą* A. Frączek	„Julek's interests” mind map
4.	*Detektyw Pozytywka* G.Kasdepke	Brainstorming regarding solving discussed puzzles
5.	*Asiunia* J. Papuzińska	Conducting an interview concerning the issue of war on the grounds of knowledge acquired by children
6.	*Kapelusz Pani Wrony* D. Parlak	„What happened to Mrs. Wrona's hat” diamond ranking
7.	*O krakowskich psach i kleparskich kotach: polskie miasta w baśni i legendzie* B. Tylicka	Staging various scenes presenting alternative versions of story's ending
8.	*Afryka Kazika* Ł. Wierzbicki	Plot from a „pot” – *Kazik's adventures*

Source: own research.

The variety of utilized methods, combining discussion methods, role-playing, group decision-making and creative problem solving, determines teacher's creativity. Moreover, activating methods used in reading work allow the pupil to become more fully involved and thus understand the content and message of the discussed literature. Unfortunately, the number of respondents who mentioned any examples of using activating methods is not very high, which, combined with the opinions of pupils who did not describe any activity that could be associated with the use of methods from this group, shows that the teacher still plays a dominant role in covering required books.

The arrangement of the classroom space accompanying the discussion of the reading helps to create an atmosphere conducive to sparking interest in book's content and undertaking activities related to it. Teachers of grade I constituted the group in which the largest percentage, as many as 15 out of 19 respondents, declared that they would arrange the classroom in accordance with the topics of the readings discussed. Taking care of this aspect, especially among the youngest age group at this stage of education, is extremely important, because creating the right atmosphere can have a significant impact on developing positive attitude of pupils towards books. 13 out of 21 teachers of grade II declared that they arrange the educational space adequately to the reading material being discussed, while in the case of grade III only 4 out of 10 teachers who answered this question do so.

The respondents demonstrated that they most often arrange book or reading corners in the classroom and decorate the classroom and the wall bulletin with characteristic elements of the discussed books, e.g. illustrations of the book cover, characters, author's portrait, educational boards. Furthermore, the classroom decor is created by works of art, posters, mind maps, mock-ups and other products of work with reading. Additionally, props related to a given book are placed in the classroom to be used during staging or drama scenes, as well as a screen and a wooden Kamishibai theater. The arrangement of benches is also modified depending on the planned methods and forms of work. One of the respondents also organizes an exhibition of required reading books. The variety of the decorative elements mentioned proves that teachers pay attention to creating an appropriate atmosphere related to the themes of the works and the issues discussed in class, which contributes to shaping children's reading interests.

Although new required books are not used as often as older items and are usually covered only in fragments, the fact that they are introduced increasingly often, as well as the act of diversifying classes with other interesting items, presents early school education teachers in a favourable light. However, methodological solutions that should be focused on pupils' activity do not dominate work of teachers and are rarely modern and innovative. However, the percentage of respondents who are innovative and use various methods when working with reading should be appreciated.

Organizing reading classes is an important aspect of covering books. Teacher's competence in this area and his or her creativity determine whether the content of the book will be understood and remembered and will contribute to the development of children's interest in reading. We examined what activities students of grades I-III prefer while working with the books in question.

The methods and forms of working with book preferred by pupils of grade I are: listening/watching content using audiovisual means, looking at illustrations, talk/ discussion, gamification, art work, comics, physical activity.

Their ideas for working with Justyna Bednarek's book about lost socks are:

- making your own sock and inventing its story,
- acting out a scene using socks and filming it.

The activities proposed for Mrs. Crow and her hat include:

- the teacher hiding the hat and the pupils looking for it using clues;
- making a hat that would suit Parisian fashion using creative materials.

The above ideas demonstrate pupils' creative thinking, their imagination and willingness to undertake various activities, which the teacher should use during classes.

The preferences of pupils of grade II were also analyzed. Their favourite methods and forms of working with required books turned out to be: storytelling, listening/watching content using audiovisual aids, working with a book and exercise book, art work, staging, and drama techniques.

Furthermore, pupils proposed their own methodological solutions that, in their opinion, would be interesting to the class and other peers.

Classes concerning the book about the amazing adventures of socks would be enriched by:

- making socks together according to a pattern from the book and giving them names, and creating a washing machine out of cardboard, which would be part of the classroom decor;
- using created socks to present a theater performance.

The pupils also proposed interesting activities related to reading *Candy, you rascal!*:

- acting out the funniest scenes from the book;
- naming the cat in the phone app "Rascal" and taking care of it, and after a week talking about the responsibilities of a cat owner, pleasures and difficulties.

Pupils planned the course of classes related to Mrs. Wrona's story using the following methodological solutions:

- organizing a fashion competition and selecting the king and queen of Parisian fashion;
- building bird's nest according to the instructions and decorating it.

When discussing the legend of Elbląg, pupils would like to take part in tasks such as:

- baking bread, just as Marcinek did, which pupils would then eat during a shared meal;
- a game in which you would have to be clever to save the city and win.

Pupils of grade II would like to experience an adventure related to *Detective Music Box* by taking part in tasks such as:

- playing board games including this character;
- creating a large cardboard figure of a detective.

The wealth of ideas goes beyond the canon and extent of known methods, emphasizing the need to introduce solutions using information and communication technologies.

Pupils of grade III favour the following methods and forms of working with books: creating oral and written forms of expression, looking at illustrations, artwork, comics, creating lapbooks and physical activity.

Their original suggestions for working with *Niesamowite przygody dziesięciu skarpetek: (czterech prawych i sześciu lewych) [The Amazing Adventures of Ten Socks: (four right and six left)]* book that teachers can use in their work include:

- jointly creating the story of another sock together with the whole class (each person creates a fragment);
- creating a board game based on a book and using it during classes.

Activities that pupils would be willing to undertake during classes related to the book titled: *Detektyw Pozytywka [Detective Music Box]*:

- creating a quiz based on reading in groups and conducting it among other groups;
- taking on the role of detectives and solving puzzles prepared by the teacher or classmates.

The extensive interests of children and the multitude of activities that are available to children every day due to the development of civilization make it a real challenge for teachers to apply methodological solutions that will interest children and at the same time develop their interest in books. However, the proposals presented by the pupils show their potential in designing classes, which a wise teacher should capitalize on and use the ideas in everyday work with required school reading.

Early school education teachers, compared to Polish teachers teaching at subsequent stages of education, are the only ones who have full freedom in selecting the required school readings. The core curriculum provides, as mentioned in the theoretical part, only suggestions of literature to be covered. However, these propositions are used by the authors of educational packages. Therefore, there is a high probability that teachers, when implementing education packages, accept proposals of authors through reaching for the suggested books or using fragments of texts included in the textbooks. Similarly, they can also follow suggestions regarding the methodological solutions used in working with proposed required books. The analysis of the most frequently used educational packages allowed us to determine what new required school readings their authors recommend.

Teachers of grades I and II most often chose the „Szkolni przyjaciele [School Friends]" package by WSiP and the „Elementarz odkrywców [Explorers' Primer]", published by the „Nowa Era" publishing house. Below is a list of required books and the range of fragments they contain.

For first grade, the „Szkolni przyjaciele [School Friends]" educational package includes a fragment of Barbara Tylicka's book entitled *O krakowskich psach i kleparskich kotach*, chapter „O Lechu i białym orle [On Lech and white eagle]". The following books were selected for pupils of grade II:

- Justyna Bednarek *Niesamowite przygody dziesięciu skarpetek (czterech prawych i sześciu lewych)* – introduction;
- Waldemar Cichoń *Cukierku, ty łobuzie*! – „Jak zostałem bohaterem literackim [How I became a book protagonist]" and „Choinka [Christmass tree]" chapters;
- Danuta Parlak *Kapelusz Pani Wrony* – chapter „Kapelusz Pani Wrony [Mrs. Wrona's hat]";
- Barbara Tylick*a O krakowskich psach i kleparskich kotach* – chapters „O Lechu i białym Orle [On Lech and white eagle]" and „Łopata małego piekarczyka [Little baker's spade]";
- Łukasz Wierzbicki *Afryka Kazika*.

It is worth noting that among the proposed items in grades I and II there is the same fragment of Barbara Tylicka's book, which, taking into account the number of legends contained in this book and the multitude of works, including poetry, in Polish literature concerned with patriotic themes related to national symbols of Poland is incomprehensible.

The „Nowa Era" publishing house proposes introducing new required books only in the second grade. The following books were used in the package:

- Justyna Bednarek *Niesamowite przygody dziesięciu skarpetek (czterech prawych i sześciu lewych)* – chapters 1 and 2;
- Waldemar Cichoń *Cukierku, ty łobuzie!* – chapter „Przeprowadzka [Moving out]";
- Danuta Parlak *Kapelusz Pani Wrony* – chapter „Wystraszek [Scaredy cat]";
- Grzegorz Kasdepke *Detektyw Pozytywka*.

The „Szkolni przyjaciele [School Friends]" educational package requires covering a larger number of new required books than the „Elementarz odkrywców [Explorers' Primer]". However, there are similarities between the publishers' suggestions regarding the selection of specific items, as three of them appear in both packages.

In order to examine the scope of the discussed required books, the application of their valors and the methodological solutions used therein, an in-depth analysis of the previously mentioned packages was carried out.

WSiP Publishing House suggested using fragments of the required books listed in the table in the educational package. WSiP assumes that the teacher reads aloud the content contained in the textbook or a methodological guide. The exception is suggestions concerning reading dialogues from comics together. Proposed methodological solutions contained in guides, textbooks and exercise books were analyzed enabling identifying the activities related to the content of new required books.

Table 5

Methods and forms of work with new required books according to authors of „Szkolni Przyjaciele"

Methods/forms of work	**New required books realized**								**Total**
	O krakowskich psach…			***Kapelusz Pani Wrony***	***Niesamowite przygody dziesięciu skarpetek …***	***Cukierku, ty łobuzie!***		***Afryka Kazika***	
	Grade I	**Grade II**							
		1	**2**			**1**	**2**		
storytelling	1	1	1	1	1	1		1	7
watching illustrations	1					1			2
listening/watching contents using audiovisual aids		1				1			2
chat/discussion	1	1	1	1		1	1	1	7
editing written forms				1	1	1	1	1	5
working with a book/ exercise book	1	1		1	1	1	1	1	7
physical/motor activity	1	1	1	1		1		1	6
arts	1	1		1	1			1	5
drama techniques		1	1	1	1				4
other (activating methods)		1			1	1			3

Source: own research.

Based on the table above, it can be concluded that the authors of „Szkolni Przyjaciele [School Friends]" presented teachers – users of their educational packages – with a wide range of methods and forms of working with new school reading materials. Tasks based on verbal and visual methods and intersemiotic translation are often planned, even though the activities are dominated by storytelling and working with a book or exercise book. Particularly noteworthy is the use of activating methods, such as: an interview with the hero of a book or „Debate for and against" and the „Basket and Suitcase" evaluation method. Moreover, the descriptions of the classes prove that the solutions presented in the table are expanded with language games and interspersed with mathematical exercises, which, although not an element of literature analysis, are incorporated into the nature of integrated education, which should combine all areas of teaching/learning.

The „Nowa Era" publishing house in the „Elementarz Odkrywców [Explorers' Primer]" educational package, consistently with the analysis, proposed using fragments of the cited readings – reading one chapter from each of the required books. The only exception is Justyna Bednarek's book, where it was recommended to read the next chapter as part of homework. It was suggested that these stories should be read aloud by a teacher or by a fluently reading student during classes, but the previously mentioned additional chapter should be read by children on their own at home. During the research, an analysis and synthetic description of the proposed activities that can be used when working with the referenced required books was made, which formed the basis for specifying the methods and forms of work that were used to formulate the course of classes. It should be noted, however, that the synthetic description does not suggest creation of reading diaries, although the authors of the package suggest preparing reading records and biographical notes of the authors, which will be enriched with illustrations, which indicates that such works could be placed in a binder or folder that could be called a reading diary.

Table 6

Methods and forms of work with new required books according to authors of „Elementarz Odkrywców"

Methods/forms of work	**New required books realized**				**Total**
	Niesamowite przygody…	***Cukierku, ty łobuzie!***	***Kapelusz Pani Wrony***	***Detektyw Pozytywka***	
storytelling	1		1		2
watching illustrations	1	1			2
chat/discussion	1	1	1	1	4
editing written forms	1	1	1	1	4
working with a book/exercise book		1	1		2
physical/motor activity			1	1	2
arts			1	1	2
drama techniques	1	1	1		3
other (activating methods)			1	1	2

Source: own research.

The proposed activities are dominated by editing written forms of expression and talks/discussions. The use of activating methods is also included: brainstorming and didactic games. The above analysis shows that the authors propose similar methodological solutions for various required books, only introducing modifications by adapting the content of tasks to the topics of individual books. However, it is noteworthy that the authors use both verbal and visual methods, as well as intersemiotic translation and activating methods such as brainstorming or didactic games.

Teachers of grade III consistently implement the textbooks prepared by the Ministry of National Education, entitled: „Nasza Szkoła [Our school]", by Maria Lorek and Monika Zatorska. These textbooks were prepared before February 14, 2017, when the new core curriculum was introduced. The only new school reading proposed in this textbook is *Asiunia* by Joanna Papuzińska. A similar analysis of its use during integrated classes was conducted. The authors of the textbook suggest using a fragment of the book, which is not recommended or required, followed by presenting the book and encouraging students to read the whole book at home. However, the authors recommend that the text be read aloud by the teacher during classes. The objectives of the classes related to the valors of this book, formulated on the basis of the course of covering the book, are: to familiarize students with the topic of World War II and the living conditions in the occupied country, to shape students' patriotic attitudes.

The educational package includes suggestions for the following activities in working with this book:

- conversation regarding the outbreak of World War II based on information prepared by children at home;
- formulating questions about the war, answering questions and writing down the most important information in a notebook in the form of notes;
- presentation of the book and its graphic design;
- acting out scenes from life in those times, involving imaginary games similar to those from Asia's childhood;
- making posters warning against hostilities and their consequences or demonstrating that world peace is the most important thing and presenting them;
- completing the tasks in the exercise book (complete the sentences about the war, matching the names of the troops to the illustrations.

On this basis, the utilized methods/forms of work were specified: viewing illustrations, talk/discussion, editing written forms of expression, working with a book/workbook, drama techniques and works of art.

The most frequently used packages usually refer to fragments of new required school readings, suggesting reading them aloud during classes. Said packages offer the use of a variety of traditional methods, but teachers' guides also include descriptions of activities relating to activating methods. Lesson plans are rich in content related to specific books, but often these activities are designed through associations with the topic and do not directly refer to the issues covered in the book. The above propositions cover only those suggestions for games and exercises that were related to the discussed reading. However, in the analysis process it was noticed that frequently the classes that start with reading and are seemingly aimed at achieving goals related to valors of covered book, are then directed solely at cognitive purposes, which constitute a separate topic that was

only the background of the events shown in the new required school readings, such as learning about the structure of coniferous trees and shrubs as a continuation of the classes related to the fragment „Christmas Tree" borrowed from the book *Cukierku, ty łobuzie! [Candy, you rascal!]* by W. Cichoń. The presence of various interesting activity proposals in educational packages, as well as superficial discussion of the covered book, require from the teacher to take a critical look and make appropriate choices.

Conclusions

The research has shown that although new titles are used increasingly frequently in work with early childhood education pupils, said books are not treated equally to the books from the old canon of required reading. It is worth emphasizing that although humorous and easy-to-read books were used the most commonly, among the frequently mentioned required books there was also a book dealing with the topic of war. However, most often the topics discussed were fragments of books that were read aloud during classes, which means that the scope is limited, so it does not differ from other stories contained in textbooks that children read every day. These assumptions are confirmed by the statements of the pupils who displayed difficulties in identifying the title of the book and its cover and associating it with the content they learned, because due to the superficial coverage of these items, they were not remembered. Similarly to the new proposed required books, modern methods of working with these books are also used by few teachers, but the very fact of intertwining said methods with activities based on traditional methods gives hope that their popularity will increase.

According to the obtained research results, teachers rely primarily on fragments of books and use a small number of methods when working with books as demonstrated by children's statements and confirmed by the most popular teachers' recommendations. This means that teachers' coverage of books is superficial, not in-depth, and the sporadic use of modern and activating methods and the varied number of choices of forms of intersemiotic translation method other than engaging in fine arts raise doubts as to the achievement of the objectives of classes based on the valors of new required school readings due to the schematic approach to dealing with books of various types and covering various issues. This also remains in contradiction to the recommendations for implementing the core curriculum, which call for multi-sensory shaping of students' knowledge, skills and social attitudes. The methodological solutions utilized by teachers, although consistent with children's preferences, do not fully cover children's interests and capabilities, as evidenced by the small number of interesting activities children remember in which they took part during classes compared to the multitude of interesting and often innovative solutions proposed by children. Although the utilized methods are seemingly consistent with the proposals included in educational packages, said methods usually concern primarily tasks that have been included in the textbook and workbook and are aimed at achieving cognitive goals related to the subject of the work, frequently only associating individual contents. Methodological solutions suggested to the teacher only in the guide, usually using a larger number of traditional solutions, rather than modern and activating methods characterized by a higher level of attractiveness, are probably often omitted by teachers.

The presented research conclusions paint an unsatisfactory picture of the use of new required school readings in grades I-III. Probably the time that has lapsed since the new books were proposed to teachers was not sufficient for said books to gain a significant position among teachers' preferred literature. The growing popularity of these books not only among teachers, but also among children allows us to assume that these books will be included in early school education on a larger scale, which could be the subject of research in the coming years. However, the lack of improvement is evidenced by the research conducted by A. Józefowicz (2022) among 17 early school education teachers from 17 schools in the city of Białystok. The indicated research showed that teachers are still most willing to use older titles that have even been eliminated from the canon of reading, such as *Zaczarowana zagroda [Enchanted homestead]* by Alina and Czesław Centkiewicz or *Oto jest Kasia [This is Katty]* by Mira Jaworczakowa. The only book that is popular with teachers is *Niesamowite przygody dziesięciu skarpetek [The Amazing Adventures of Ten Socks*...] by Justyna Bednarek, but teachers pointed out that it is largely the choice of children, among whom this series is very popular. Teachers also appreciate Marcin Pałasz's *Sposób na Elfa [The Way to the Elf]*, which has already been removed from the reading list. It is likely that using the same books over and over again may mean duplicating the same working methods.

It would be recommended to repeat the research in the following years, because from 2023 onwards new series of educational packages will be introduced, such as „Szkoła na TAK! [Say YES to School!]" by WSiP, „Ale to ciekawe! [How interesting!]" by MAC publishing house or „Wielka Przygoda [Grand Adventure]" designed by „Nowa Era" publishing house. Following implementation of these packages in individual classes, it would be prudent to conduct a similar analysis of the use of new required school reading in early school education and compare the results with the results presented herein in order to assess the improvements in promoting reading.

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